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Denny Davis' "Universals"... C/L Waco

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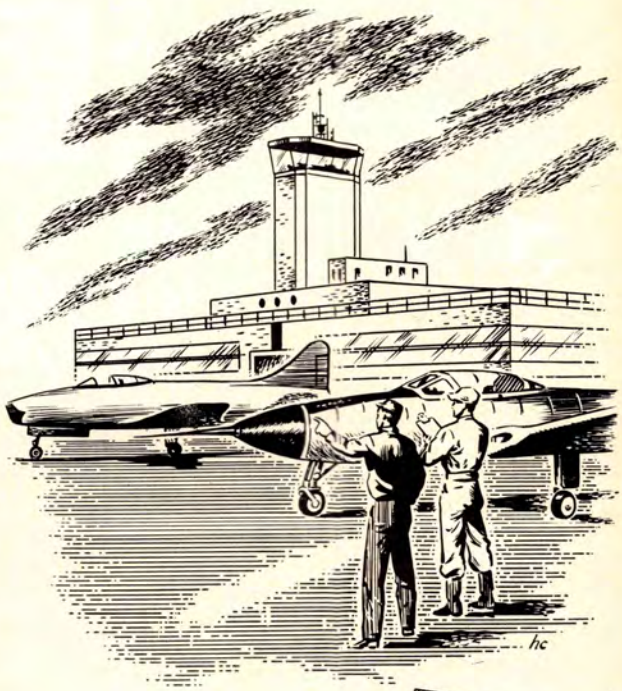

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Cover: Boeing B-52 Stratofortress. Powered by eight P&W J-57 jets, it is capable of fighter speeds. Span 185 ft., weight over 300,000 lbs. Will be backbone of Strategic Air Command. . . . For information on insert see page 38: Denny Davis' "Universals."

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FROM THE READER

G.I. Modeler . . . Would like to take this opportunity to thank you for your article on "Hail the G.I. Modeler," in the Annual. Being one of them myself for almost six years, I can tell you that Hutchison's cartoons were not too exaggerated. My only kick is that not enough bases have made facilities for the U/C fan. To my knowledge there is no model hobby shop or U-control flying area on this base. I am lucky due to the fact that I live in government housing, so I can just clear off a table and go to work. But I still have to go to Sacramento (12 miles) to get my kits and supplies. I have been an ardent reader of Air Trails since 1942, and have always enjoyed every issue. Would also like to commend Lt. E. R. Atkins on his "B-26."

S/Sgt Arthur D. Craig, Mather AFB, Calif.

Danish Friend . . . After reading the Air Trails for 1953 I want to thank you for good informations and for the inspirations it gives me. At the same time I want to tell you over there how "enviously" we are here in Danmark when we see the advertisements for example of gas engines.

B. G. Ostergaard, Copenhagen, Denmark

Flying Saucer Almost Disappears . . . Having flown practically all kinds of conventional "gassies," I felt (like so many others) that I would like to get off the beaten path. So while thumbing through some back issues of "AT" I came across just what I was looking for. In the August '52 issue you have "a-la flying saucer." I built it. And oh, brother, is it a hot ship! The only change I made was to put in an .045 baby Spit instead of an .020 Infant. It is so good it was almost lost on several occasions.

Archie Hovanesian, Jr., New Britain, Conn.

Nats Beef (on Stale White) . . . Returning from Willow Grove and the '53 Nats, I have one beef I would like to sound off on. Two dollars for a Victory Banquet ticket and you get handed a box lunch with stale sandwiches, if you can find them! For two dollars I could buy a chicken dinner with all the trimmings in a restaurant. It was quite a let-down to have the National Exchange Clubs pull this. One would anticipate more from them. It would seem that when they go to the expense of putting on the world's largest model airplane contest, they could put on the finishing touches with a decent Banquet for its trophy winners and other contestants. Other than that it was a very fine meet in my opinion and I wouldn't have missed it for anything.

Keith B. Monnier, Algonac, Mich.

• Mattie Sullivan, the contest director, points out that the pigeons which roosted in the work hangars during the week disappeared shortly before the "banquet."

Cal Smith Is Commended . . . I got my first issue of "AT" as a present, and haven't missed an issue or annual yet. It's a great help. And say, I want you to give that guy Cal Smith a brass button or something. He's good! A while ago I got my September issue, and his drawings on the cover are hot.

Ben Moon, Montgomery, Ala.

It Ain't Regulation! . . . It is about time that American modelers awake to the fact that half of them don't know how to place the American Air Force insignia decal on a model. Look in the July 1953 Air Trails issue on pg. 8 at the beautiful four-engine U/C bomber built by an Army man. The only thing I can see wrong on that job is the insignia on the wing. The top point of the star should always face toward the front of the wing and on the body the top point should point upward. I think that the average modeler is in so much of a rush to finish that he doesn't realize how he is placing the finishing touches.

Richard O'Toole, Cambria Heights, N. Y.

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More Plans! . . . I have just finished reading your September issue of "AT" and I was very happy to see plans for the F4F-4 Wildcat. This was a great plane in its day. It's hard to find plans for WW II planes and it takes a mag like yours to bring them to us modelers. Let's have more such plans.

Dan Lanyan, Hudson Falls, N. Y.

Medina Modelers Helped . . . I want to praise your magazine for its very helpful articles such as "How to Paper and Finish Models" —some time ago you had that and more kids here in Medina are turning out better ships because of that one article. Let's have more!!

E. A. Morton, Medina, O.

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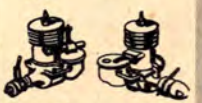

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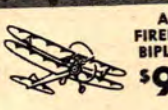

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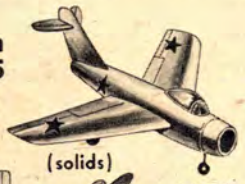
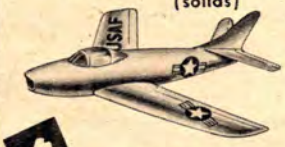
Balsa "Cat Boat"
Partially assembled

3 When you have built your model, paint and finish as instructions suggest.

Russian MIG-15
.75
Kit J-2



(solids)



F-86 Sabre
.75
Kit J-1

4 Add detail with colorful decals furnished.

AIR BOAT
$1.00

Kit E-2

New power model runs with Gas or Electric motor

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More than 1,100 hours went into this Cleveland Luscombe Sedan by Karl Schweickart of Ironton, Ohio. Super Cyke, carved pilot, dummy controls, all instruments on panel, lights that work, demountable wings for transport. All surfaces planked with balsa; flies via control lines.

Bar California From Contests?

■ Jim Walker's suggestions for a flight plan contest has produced some excellent response. With free flight fields increasingly hard to obtain, Jim's ideas make real sense. If your club would like more information on this method of conducting free flight competitions without requiring that models fly off the field write to Jim Walker, c/o Air Trails—we'll forward your requests.

To encourage fathers to work along with their model-minded offspring, Mr. Walker has announced the "Father and Son National Championship Award" which he will present at each National contest. This new Walker Trophy would go to the Father-Son combo that racks up the best times in three events, one of which would be control line stunt. The father and the son fly as separate entries, not as a team. The father would fly in "open" class stunt and his son in (let us say) "junior" class stunt.

As a complete departure from how other major awards are established, Jim requests that "those who want to participate write the rules." So-o-o, if you've flown as a member of a father-and-son team, or if you know someone who has ask 'em to send along their suggestions for this important new event to Jim Walker.

Some Fête. The U.S. 1953 Wakefield and F.A.I. Gas teams were accorded some fine treatment here and overseas. We wonder why so few turn out for the trials; if all the modelers could know how royally received are our international model flying representatives, perhaps attendance at the quarter finals would pick up considerably.

U.S. Rubber Co., for instance, threw a nice dinner for the flyers at Idlewild airport in New York prior to the teams' departure for England. P. J. Regan who handles T-56 sales and promotion for U.S. Rubber served as host. Pat supplied us with a listing of home addresses for team members. Perhaps readers would like to have it handy.

Team Captain—William Fletcher, 8708 Grand Ave., Elmhurst, N. Y.

Wakefield team—Joseph Foster, 10330 S. Capitol Ave., San Jose, Cal.; Carl Hermes, 1109 Woodcrest, Arlington, Tex.; George Reich, 5891 W. 217th, Parkview Village, Ohio; Cliff Monplaisir, Meadowbrook Manor, Exton, Pa.

F.A.I. Gas team—Stanley D. Hill, 1020 State St., Santa Barbara, Cal.; David Kneeland, 8420 Greenwood, Hickman Hills, Mo.; Joe Elgin, 4075 E. 147th, Cleveland, Ohio; Carl Wheeley, 1105 13th St., N.W., Washington, D. C.

Stan Hill, incidentally, said his flying wasn't up to par because Mrs. Hill wasn't there in England. Says she has a steadying effect on him at contests and makes excellent adjustment suggestions.

Ban California? Looks as if that's the only way the rest of the country could ever garner any high places in the Nationals. Checking on performance-by-states in the Nats it turns out that in addition to winning the team and high-point champion awards, California also walked off with the most first places—10, to be exact. New York and Ohio tied for second-place honors with 9 "firsts" apiece; Georgia was next with 8. Texas and Pennsylvania each had 7; Michigan and New Jersey, 5. The following states could claim 2 first places each: Alabama, Connecticut, Florida, Kansas, South Carolina and Tennessee. A single first was taken by a flyer from Indiana, Iowa, Kentucky, Maryland, Massachusetts, Mississippi, Missouri, New Mexico, North Carolina and Wisconsin. Twenty-four states in all accounted for all the first places.

So what's the answer? Guess we'd better have the West Coast lads fly in a separate group so the rest of the country can look better.

Revamped L.A. Group. The Highland Modelers inform us of their reorganization. The club is now active in both free flight and control line. Members hold one national record and numerous contest victories. Meetings are held at a local hobby shop every Friday evening. Corresponding secretary is Ronald D. Rounds who can be contacted at 6129 Buena Vista Terrace, Los Angeles 42, Cal. Officers are Hal Seknicka, pres.; Bob Stroup, veep; Bob Berglund, sec-treas.

Light Upped. Release from Engineering and Research Corp., Riverdale, Md., reveals Gordon S. Light, an early proprietor of the Dope Can, has been appointed staff engineer to ERCO's president. Mr. Light, who was graduated with a degree of aeronautical engineering from New York University in 1937, spent three years with the Johns Hopkins Applied Physics Laboratory. He joined ERCO's engineering staff as a design engineer in 1946 and in 1951 he assumed the duties of assistant chief engineer in charge of armaments.

Gordon is best remembered for his winning of the Wakefield Trophy.

Fiber Glass Fact. Crisco, the well-known shortening, makes an effective parting agent according to one expert in the field of fiber glass modeling. Worth trying.

Marine Modelers. Active at the famed marine air base the Cherry Point Aero Modelers are a growin' group of flying Leathernecks who operate under the guidance of M/Sgt. H. D. Fitzhugh of Marine Aircraft Group-26 and M/Sgt. W. R. Williams of C.P.'s rifle range. Fitzhugh is president of the C.P.A.M., Williams is the vice president. The club meets every Wednesday at the (*Continued on page* 10)

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When flying R. C. it is necessary to reduce venturi opening from 25 to 50% on almost all engines. Large props slow your engine R.P.M., reducing suction. The model does not fly level at all times . . . dives and stalls are encountered changing the fuel force. Plug the venturi opening to such an extent that you get the power you want from your engine. Too much speed in R.C. can be disastrous.

GRISH BROS.
St. John 1, Indiana

Dope Can

(Continued from page 8)

Station Hobby Shop for business and building sessions. The group now fly planes from the Administration Building's large parking lot on Sunday afternoons. This is a vast improvement over the rifle range from which they used to operate.

Nats-Plymouth-Mirror. Many modelers living east of the Mississippi had the unique privilege of being able to participate in three major contests this last summer—all within a 30-day period. First came the Nationals at the Willow Grove Naval Air Station outside Philadelphia, next was the Plymouth competition at Detroit, then the following week the Mirror's annual flying fair at Floyd Bennett field in Brooklyn. What an opportunity to witness models in action!

Items: the Nationals were run by modelers (many of them from the model industry) for modelers for little or no pay; the Plymouth meet had fewer contestants per official—or more officials per event (figure it any way you want)—than any contest in history; the Mirror competition started earlier than any affair other than a Wakefield competition (6 a.m.)

All told there were 12 days of model flying: Nats had 7 days, Plymouth 4 and the Mirror one. Of all those there was but one day of rain—the final day of the Nationals and that didn't stop flying, just sogged things down some.

Taking types of models and comparing their performances at the three contests makes for some interesting thinking. Navy Carrier, for example. Medium interest at the Nats, not too big a turn-out at Plymouth, but at the Mirror—zowie!—dozens and dozens of entries. Wots the answer here, you ask? Well, guess it's that Grumman aluminum canoe given for 1st place. Richard Matava of Hartford, Conn., won it, by the way.

Free flight did remarkably well at Floyd Bennett—mostly because of little wind during the morning. Some entrants had their three official flights completed by 9 a.m. The Brooklyn field would be murder on a F/F on a windy day, of course, with water on three sides and one of NYC's most heavily traveled parkways on the 4th side. Luckily—not much wind.

But we're convinced that the free flight clan have the toughest time . . . At Willow Grove you had less than a 50-50 chance to get your ship back once it flew off the field; same at Selfridge AFB in Michigan where the Plymouth free flight events were run off. There, by the way, you could witness some weird flights at one period. Models would take off and drift away from Lake St. Clair (which bounds the field on one side) due to the surface winds, then on reaching 800 to 1,000 feet would return over the field and settle in downdrafts within easy sight of the timers. Obviously some free flighters live right! But—let's face it—to win the meet the modeler usually has to lose his ship. And that's a shame. No wonder Jim Walker's flight plan contest is getting so much applause.

The Mirror was the only contest to run a straight beauty event requiring only that the entries be flown. Mirror Beauty was divided into scale and non-scale. Bob Yoemans of West Haven, Conn., won the flying scale beauty at Floyd Bennett with his well-known SBD which has appeared in many Carrier events. Stephen Ditta of the Bronx took non-scale beauty with a lovely half-A free flight. At the Plymouth competition a beauty award goes to the best finished team racer; Lowell Secrist, Scherr, W. Va., took that prize at Detroit.

Flying scale at the Nationals and Plymouth produced a lot of work on the part of officials, to say nothing of the entrants. There's a lot of heartbreak in such a contest; we're glad to report that since the stunt requirements in control line flying scale were dropped, not so many models plow in. Fewer wash-outs this year than ever before.

Prize presentations are a part of any contest, right? At the Nats the awarding went off better than at any time since the war.

(Continued on page 12)

The CLEANEST SWEEP

in the history of the NATIONALS

PROOF OF the Thimble Drome's superiority in the 1953 NATIONALS held in Philadelphia. T.D. engines placed as follows . . .

½A Speed Open—1st, 2nd, 3rd and 5th places
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½A Free Flight Junior—1st and 2nd
½A—PAA Free Flight Open—1st, 3rd and 5th
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19 out of 27 places—First to Third!

In these nine events, 31% of engines used were Thimble Drome engines, but they won 77.7% of First places and 66.2% Second and 66.2% Third.

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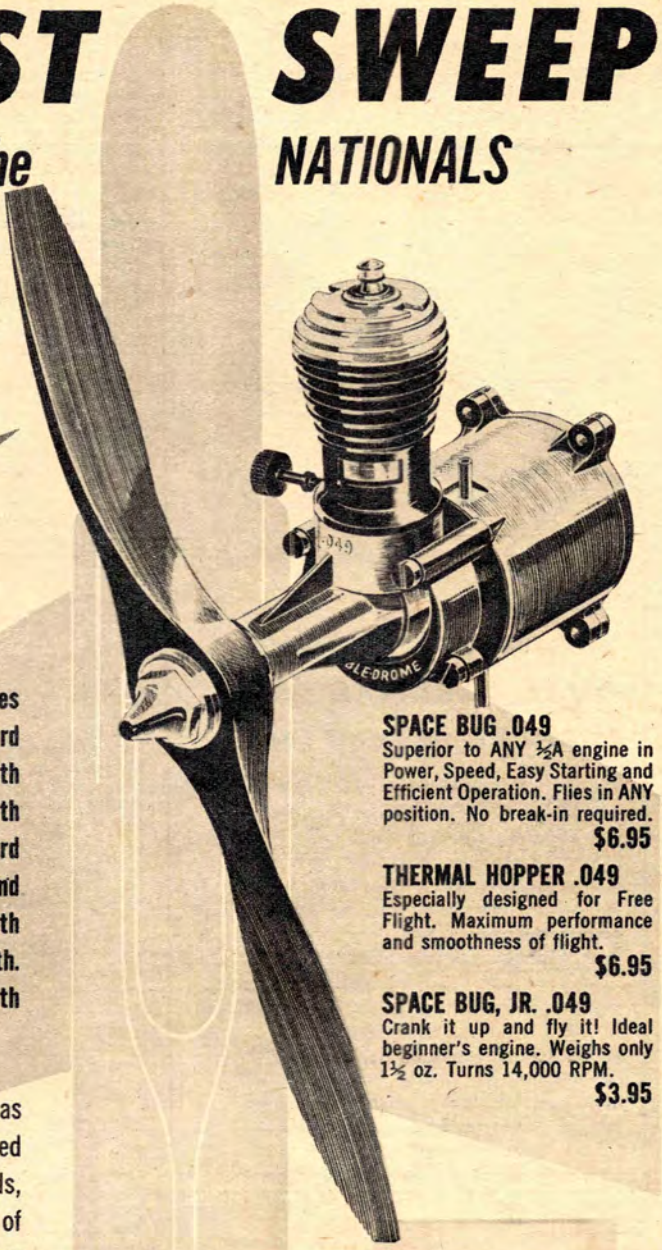

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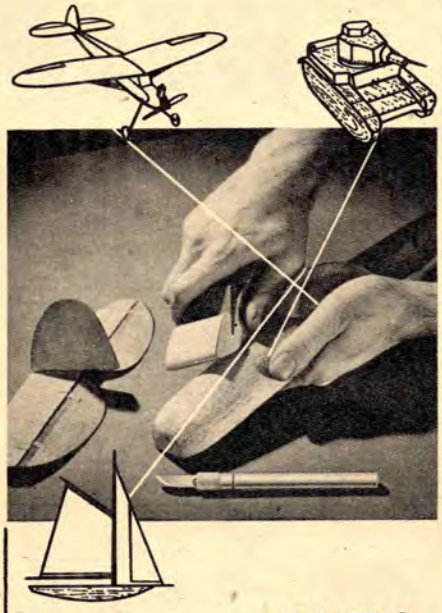

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Dope Can

(*Continued from page* 10)

Not too many flubs except in the case of the National champion when his brother was initially announced as "the" flyer through an error. This year the Plymouth presentations went off so smoothly that almost 150 trophies were awarded in 1 hour, 20 minutes. And that included a photograph being taken of every 1st, 2nd and 3rd place winner. The Mirror uses super market shopping baskets to pass out the loot! It was not unusual to see a first-place winner getting a trophy, a watch, a certificate for a suit of clothes, three kits, batteries, fuel, an engine, plus other items! About $10,000 in merchandise, model items, bonds and cash went to MMFF winners.

Speed flyers had reasonably good flying facilities at the Nats and Mirror. At the Plymouth meet, ball diamonds were used for control circles and every time a speed model would land great globs of dirt would be kicked up, which meant the engine couldn't be turned over again until it had been thoroughly washed out. At both the Nats and Mirror a jet job broke up on the ground with the power plant slithering away through the crowd accompanied by cries of "Don't touch it! Don't touch it!" Nobody hurt in either case, thank goodness. Maybe a safety committee should cast a combined eye over questionable models before they fly???

Radio control facilities were adequate at all three of the meets under question. Most familiar cry was "Interference!" Whenever Howard McEntee's locator was in action the answer was, "You're crazy!" But at the Mirror meet effective leadership for the event was hampered by lack of a permanent P. A. system—something really needed to keep RC'ers on the straight and narrow. Evidently not everyone is the complete gentleman we've been led to believe.

Posting of results—certainly an item of interest to every contestant: not bad at the Nats, better than at some past affairs; very good at the Plymouth meet; somewhat bewildering at the Mirror meet. There winners' numbers are announced, but nobody ever hears about the winning times or performances.

Stunt was fairly uniform all along the way—perhaps the most look-alike event of the entire AMA list. Not too much spectator interest, very little on the part of non-competing flyers. Too cut-and-dried, said some; too restricted, said others; too much of a test of the judges, complained a few. Let's have some optional stunts and maneuvers, demanded many. Maybe that's what is needed. Any ideas?

But combat? Well, now, there's a horse of a different color. Modelers were glad to stop by and watch that event at all three of the big Eastern meets. And as long as an event pleases the modeler you'll find a lot of entries.

What was the most appealing event at all three meets? For straight categories radio control probably drew and held most of the passing contestants longer than anything else. But for real crowd stoppers: a stunting jet at Plymouth and the Barnstormers Model Air Circus under the direction of Walt Stevenson, also at Plymouth. We'll have photos of both those events in the forthcoming issue.

All in all it was a busy contest season. From the Mirror meet on Eastern activities run down hill: the West Coasters and the Southwest enthusiasts keep going into the winter months to a certain extent.

What happened of real significance during the past contest season? Well, you can say that we had a fine Nationals and Plymouth Internationals. The Mirror survived the loss of Grumman's field with a real "hot" contest at Floyd Bennett (during a NYC heat wave). America won the Wakefield and F.A.I. gas events. New records were set in almost all categories. Radio reached new heights in popularity. Interest in combat grew; the carrier event was a spectacular success at the Mirror. Free flighters remain undaunted even in the face of flying field losses.

It was a good year for model aviation—a very good year. And we expect 1954 will be better'n ever!

—THE DOPESTER

A/2 Glider Internats

■ The opening of the 4th "World Championship" A/2 Glider contest, held at Lesce-Bled, Yugoslavia, August 21 to 24, 1953, saw confusion on all fronts. After an all-night rain we awoke at 4 a.m. to a dark and dismal outlook. The first round had to be delayed because of insufficient light, the round starting at 5 a.m.

Referring to the confusion, it mostly centered about the British, Italian and American teams. The British had lost all their model boxes somewhere in Germany or Austria. Not to be disheartened, their team members Byrd, Brooks, Lindford and Hanson set about building new airplanes. Upon appearing next morning with two finished models, they were greeted by a rousing round of applause. As for ourselves, we had many an anxious moment trying to round up our models in time to test. The last moments of darkness saw us trying to adjust some badly trimmed ships. George Perryman lost his "Nordik" in the process and we were all but licked. Next morning found us looking in various wet cornfields.

Meanwhile the meet had started and we could hear the P.A. system announce the first maximum for Gerhard Wummel of Germany. At 5:30 we elected to fly with what we had, but now were confronted with a storm front moving in fast. Numerous models were being towed to the top of the 328 foot lines only to be bounced around in very turbulent air, mostly upwards. The storm hit and still a maximum or two was recorded, but not so for us.

George Perryman was first off. Upon launching he became snarled in two other lines, the resultant crash splitting the fuselage wide open. Surely all was confusion . . . tows were being made in all conceivable directions, timers and contestants running for non-existent cover, the P.A. system calling for a conference of team managers only to die out because of excess condensation, and then to top all, the Italian team arriving at three minutes to six and wanting their flights. They got two off after 6 a.m. unofficially but were later allowed the flights by a nearly unanimous vote of all the team managers. Someone forgot to wake them.

The final tabulations of the first round showed that no fewer than nine maximums had been recorded. The second round had been forced into cancellation.

The following morning we were greeted by clear skies overhead, haze completely encircling the field, and snow on the nearby mountain tops. Air was moving in four directions, the calmest spot being the launching site. Ground level of air was coming from two directions, causing a venturi effect and definite lift. A total of eleven maximums resulted. A further study shows that only one person repeated, Hans Hansen the eventual winner. Net result of first two rounds—nineteen persons with maximums, some as high as seven and eight minutes. Hansen flew for Denmark.

In keeping with the pattern already set, the third round was flown in plain thermal weather. It was possible to observe some of these thermals in action as various mist clouds were being sucked upwards at a rapid rate all over the valley. Nevertheless, the total of maximums dropped to five, with Hansen again getting his to win.

Second place went to Carl Heinz Denzin of Germany, with flights of 4:45.4, 5:00 and 4:18 to total 14:03.4. Third place man was Jean Pierre Templier of France who made flights of 5:00, 3:55 and 5:00 again to total 13:55. Fourth place went to the 1952 champion Bora Gunic of Yugoslavia, who compiled flights of 5:00, 4:30 and 4:14 for a total of 13:44.

Team award of the Col. Daumerie Cup also went to the Danes who compiled a three-man total of 2211 seconds. The German team totaled 2148 seconds, while the Swiss amassed 2065 seconds, better than a 3:45 average.

This year marks the end of the five-minute limit and also is the first time this limit has been obtained in championship competition. Dave Kneeland in Free Flight Gas, Joe Foster, Eliseo Scotto and Hugh O'Donnell in Wakefield and Hans Hansen in A/2 Gliders make up this select circle.

—BILL FLETCHER

28 First place winners at the '53 nationals used TOP FLITES and POWERPROPS

25 firsts for the four other competing brands combined

Will Stewart, Trenton, N. J., created a sensation at the Nationals when his tiny original racer streaked to victory in the Class ½ A Speed, Open event, at a speed of 84.66 m.p.h. The hot little number has an 8" span, 2 oz. weight. Will used a Thermal Hopper engine with original fuel and a **4⅜/6½ POWER PROP.** The balding fellow on the left is Carl Goldberg of TOP FLITE MODELS INC.

Class B Free Flight, Jr.
Harry Capper
Philadelphia, Pa.
11 min. 52 sec.
Engine: Torp 29
PROP: 10/6 POWER PROP
Plane: Sandy Hogan
Fuel: Power mist

Class B Free Flight, Open
Marvin Burley, Jr.
Spartanburg, S. C.
17 min. 19.4 sec.
Engine: K & B 29
PROP: 11/4 TOP FLITE
Plane: Modified Senator
Fuel: O & R #2

C. Hill Hutchins, Jr., Spartanburg, S. C., has good reason to flash that smile. His sleek Bendix Trophy Mustang, powered by a Fox 35, Power mist fuel, captured top honors in the Control Line Flying Scale Senior event. **Four blade 10/6 POWER PROP.**

Control Line Flying Scale, Jr.
Barry Burr
Corpus Christi, Texas
Engine: Torp 29
PROP: 10/6 TOP FLITE
Plane: P-47D
Fuel: Thimble Drome Racing

Control Line Fly. Scale, Open
Thomas Dean
Corpus Christi, Texas
Engine: Cameron 19
PROP: 9/6 TOP FLITE
Plane: Aeronca Champion Duster
Fuel: O & R XL-4

R.O.W. Free Flight, Jr.
John M. Clapp
Greenfield, Mass.
7 min. 2.6 sec.
Engine: Torp .049, Thermal Hopper head
PROP: 6/3 TOP FLITE
Plane: Original
Fuel: K & B 1000

Uncle Sam can be justly proud of **Jim Kelly.** This inland sailor from Mission, Kansas won the R.O.W. Free Flight Senior event with his Zeek. Jim used a **9/4 TOP FLITE,** harnessed to an Elfin .15 engine, his winning time—10:07.2, fuel—McCoy Diesel.

P.A.A. Clipper Cargo
Hal Roth
Richmond, Calif.
23¼ oz., 42 sec.
Engine: McCoy Diesel
PROP: 7/4 TOP FLITE
Plane: Blue Boy (Original)
Fuel: McCoy Diesel

Team Racing
Bobby Huffer
Annapolis, Md.
Engine: Fox Racing 29
PROP: 9/8 POWER PROP
Plane: Little Bess (Original)
Fuel: Power mist

Class C Speed, Sr.
Sam Deheleon
Detroit, Michigan
153.85 m.p.h.
Engine: McCoy 60
PROP: 9/11 POWER PROP
Plane: Original
Fuel: Original

½ A Scale Free Flight, Open
Ed Stoll
Detroit, Michigan
Engine: Wasp .049
PROP: 6/3 POWER PROP
Plane: Fairchild 24
Fuel: Thimble Drome Racing

Here's **Sal Taibi** spinning the **9/4 TOP FLITE** on the original Payload he used to win the R.O.W. Free Flight Open event. Mrs. Taibi (standing in background), traveled with Sal from Lakewood, California, to lend her moral support. Engine is a Torp 23, flight time was 13:00.5, fuel —O & R XL-2.

Class A Free Flight, Sr.
Carl Curtis
Yuba City, Calif.
12 min.
Engine: Fox 19
PROP: 10/3½ TOP FLITE
Plane: Spacer A B
Fuel: Ohlsson Gold Seal 1/2A

Young **Walter Pyron,** Decatur, Georgia, is proud of his Black Tiger. Powered by a Fox 35 with a **10/6 TOP FLITE,** the Tiger racked up 354 points to win the Junior Stunt event, fuel—Testors 39.

Class A Free Flight, Open
Dick Duvendeck
Portsmouth, Ohio
22 min., 8.2 sec.
Engine: E.D. 15 (Diesel)
PROP: 9/6 TOP FLITE
Plane: Zeek
Fuel: Simpson Special

Combat, Junior
Richard J. Heist
Ft. Worth, Texas
460 points
Engine: Fox 29
PROP: 9/6 TOP FLITE
Plane: Patches (Original)
Fuel: K & B 100

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Combat, Senior
Gerald Wagner
West Cheshire, Conn.
560 points
Engine: Fox 35
PROP: 10/6 POWER PROP
Plane: Rock (Original)
Fuel: O & R XL-4

Judson Stone's dad, who passed away recently, would have been especially proud of his son for winning first place honors in the Class A Free Flight, Jr. event. The Topeka, Kansas lad used a Zeek, with a **9/4 TOP FLITE** on an Arden 19 engine. Judson's winning time was 14:06.2, fuel—O & R #2.

Combat, Open
William Andrews
Easton, Pa.
520 points
Engine: Fox 35
PROP: 9/6 POWER PROP
Plane: Ringmaster
Fuel: Testors 39

Class C Free Flight, Jr.
Bill Gregory
Springfield, Ohio
4 min. 38.8 sec.
Engine: Atwood 62
PROP: 13/5½ TOP FLITE
Plane: Sailplane
Fuel: K & B 1000

Class C Free Flight, Sr.
David Espen
Bronx, N. Y.
14 min. 11.4 sec.
Engine: Fox 35
PROP: 11/6 TOP FLITE
Plane: Sandy Hogan
Fuel: Thimble Drome Racing

Class C Free Flight, Open
Al Grenoble
Yuba City, Calif.
17 min. 13 sec.
Engine: Fox 59
PROP: 12/5 TOP FLITE
Plane: Modified Sailplane
Fuel: Ohlsson Gold Seal 200

½ A Navy Carrier, Sr.
William Davies
Maplewood, N. J.
Engine: Wasp .049
PROP: 6/3 POWER PROP
Plane: F6F Hellcat
Fuel: Homebrew

Navy Carrier, Jr.
William M. White, Jr.
Sacramento, Calif.
Engine: Atwood .49
PROP: 11/8 POWER PROP
Plane: Stearman N3N
Fuel: K & B 1000

Navy Carrier, Sr.
Dave Domizi
Rocky River, Ohio
Engine: Fox 35
PROP: 9/6 TOP FLITE
Plane: AF2S—Guardian
Fuel: Power mist

Gail Eckstein flew a Bonanza all the way from San Lorenzo, Calif., and then flew away with top honors in the ½ A Navy Carrier, Open event. Gail stuck a **5¼/5 POWER PROP** on a Thermal Hopper engine, enabling his SBD-3 Dauntless to pile up a winning total of 253 points. What's the "coming attraction" Gail?

Fifteen year old **Johnny Sparnicht,** Hempstead, N. Y., got the thrill of his life when his Nieuport 11 took 1st place in the Jr. ½ A Scale Free Flight event. Johnny's power plant was a Cub .049, his prop a **6/3 TOP FLITE,** and Thimble Drome Racing Fuel. Nice goin' John!

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Air Notes

KOREAN WAR PROVED SABRE SUPREME IN THE AIR

SOME STATISTICS on the Korean air fighting: In the beginning the USAF over there consisted of F-51 Mustangs, F-80 jets, F-82 Twin Mustangs and B-26 Invaders. The North Koreans had piston-driven LA-7 and Yak-9 fighters and Il-12 ground attack planes. First kill of a Communist plane was in summer 1950 when Maj. J. W. Little flying a Mustang shot down an La-7; a number of other La-7s were brought down that day by F-80 pilots. By end of August, 80 Communist planes were shot to earth and 21 damaged, virtually wiping out the North Korean Air Force. The MiG-15s first appeared in action shortly after the entry of Red China into war, November 1950. To Lt. Russell Brown, flying an F-80, go the honors of bringing down in flames the first MiG. The F-86 Sabre joined the U.N. forces in Dec. 1950 and shortly afterward Lt. Col. Bruce Hinton flamed a MiG-15. Though greatly outnumbered, the Sabres had an upper hand over the Communists jets through the entire war, shooting down a total of 840 MiGs for a combat loss of 56 F-86s—an unheard-of ratio of 14 to 1.

★ ★ ★

HANDLEY PAGE VICTOR, Britain's crescent wing bomber (photo above) went into super-priority production for the RAF. . . . AIR NATIONAL GUARD to receive 200 jet trainer and fighter planes, 24 already delivered. . . . PRIVATE PILOTS who want special registration numbers for their airplanes will have to pay a fee of $10 for the privilege from now on, according to announcement made by C.A.A. . . . GREAT BRITAIN returning to U.S. all B-29 bombers, which they named "Washington," supplied under M.D.A.P. to RAF. All British B-29 squadrons are being replaced by Canberras. . . . CZECHOSLOVAKIA building MiG-15s at a rate of 20 a day. Number of Czech-built MiG's were in action in Korea.

★ ★ ★

BOEING producing a high-altitude reconnaissance version of B-47, designated as RB-47E. Chief difference consists of longer nose, air-conditioned camera compartment. . . . NORTH AMERICAN bringing out an improved version of the Navy FJ-2 Fury; fuselage is slightly larger to accommodate the more powerful Wright J-65 Sapphire jet engine. New designation is to be FJ-3.

CESSNA 180 piloted by Bob McNulty and Landy Taylor remained aloft for 10 hours and 14 minutes without refueling, during International Aviation Exposition at Detroit. Plane's 225 hp Continental engine consumed a total of only 44 gallons of fuel.

★ ★ ★

ONE of the six Bell 47D helicopters operated by Helicopter Air Service, Inc. of Chicago for mail carrying has logged over 4000 hours of flying, and after four years of hard use is still in perfect condition. . . . HILLER HELICOPTERS acquired rights to Doman YH-31 helicopters. . . . HELICOPTER passenger service inaugurated between New York City's major airports. Heliline operated by New York Airways with Sikorsky S-55s. . . . DOUGLAS XF4D-1 Skyray was flown from California to Patuxent River, Md., Naval Air Station for carrier tests. . . . CHILEAN government contracted for million dollars' worth of Beechcraft T-34 Mentors. All Chilean pilots will receive basic and advanced training in this plane.

MORE than 92 percent of the 1100 world-wide research projects aimed at increasing aviation safety are being conducted in the United States. . . . U.S. air transport manufacturers built 80 percent of the high-speed aircraft being flown on world airways. . . . USE of parasite fighter revived again. Air Force has been experimenting with Republic F-84s carried by B-36s. Both airplanes have been modified to enable them to take-off and land as single unit. The parasite F-84 can be released and retrieved by B-36 while in flight. . . . DOUGLAS DC-9 will be a turboprop version of the DC-7 with reinforced wings. Engines four Pratt & Whitney T-34.

★ ★ ★

"THE SPIRIT OF ST. LOUIS," an autobiographical narrative of the planning and execution of the first solo nonstop flight across the Atlantic authored by Charles A. Lindbergh, is indispensable reading for aviation history enthusiasts as well as all those interested in progress of U.S. aviation. Published by Charles Scribner's Sons, 597 Fifth Ave., New York, N. Y. Price of the book is $5.00.

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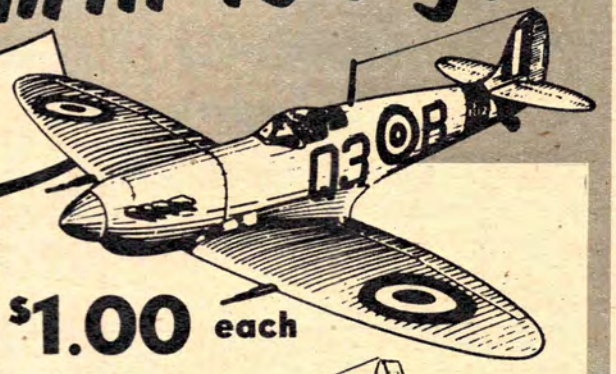

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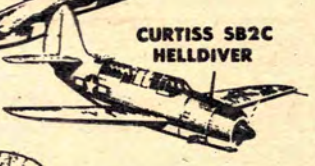
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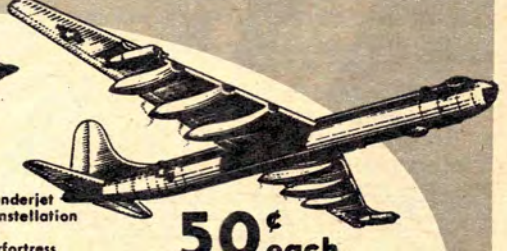

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Air FORECAST and REVIEW

GUIDED MISSILES AGAIN: is an anti-aircraft missile artillery or an interceptor? Army and Air Force really going at this one hammer-and-tongs. Air Force is even showing interest in Navy flak missile, hoping to round up best possibilities in country, under its air defense plan.

Meantime, there is continuing review of missile programs. Even in the face of cancellations, missilemen feel the cool, clean breeze sweeping through the missile morass. Known casualties so far: General Electric's Project Hermes, a family of surface-to-surface bombardment missiles for short and medium-range bombardment—heavily cut back; Project Meteor, a Navy flat missile monitored by MIT and built at Bell Aircraft—cancelled.

Progress: Missile experts believe in these: Hughes Falcon, air-to-air missile; Northrop Snark, long-range surface-to-surface bombardment. Boeing's Bomarc is reported as technically excellent, but suffering from teething troubles in rocket engine development.

WONDER WHY speed runs are made on hot days? Lt. Col. William Barns, who set 715.7 mph record in F-86D Sabre, made his passes on a 100-deg. day. Reason: Top speed of airplane is set by drag rise at some critical Mach number; or fraction of the speed of sound. Let's say it's 0.9 Mach for the Sabre. The hotter the day, the faster is the speed of sound through air. Therefore, the airplane top speed—0.9 times the speed of sound—is higher in mph on a hot day, although its flight Mach number doesn't change. The same Sabre will break its own record if it flies on a 110-deg. day the next time. . . . *One complication:* As temperature goes up, available thrust from the engine goes down. But for these runs, that's not too much of a problem.

ROTARY BOMB-BAY: Engineers at Martin have come up with combination bomb-bay door and bomb rack. Preloaded, it's hooked in the plane. Near the drop point, the door does a 180 around a fore-and-aft pivot line, exposing the bombs. After the drop, back it goes to a clean contour. *Claims:* reduced drag, because doors aren't opened; reduced buffeting, because no hole in fuselage bottom to snag air.

CONVERTIPLANE WITH DELTA wing is unusual design aim of West Coast engineering group, mostly from North American. The novel craft, with a prototype under construction and predicted for flight tests this year, uses a large co-ax prop-rotor at the nose of the delta. This head is tilted from vertical to horizontal to give you vertical left and transition to straight and level flight. Prototype will use McCulloch engines of 70 hp each; gross weight is stated as 1,100 lb. Crew is two.

ARMY AIR FORCE backing helicopters heavily as "trucks of the air," is branching out with a variety of rotary- and fixed-wing designs up for evaluation or purchase this year. *Army will buy:* Sikorsky S-58, 20-place copter; Hiller H-23 for reconnaissance and training; Cessna L-19 Bird Dog; de Havilland of Canada L-20 Beaver.

Army will test: Doman YH-31 evac copter; McDonnell convertiplane L-25; de Havilland of Canada Otter, a bigger Beaver; fuselage construction of the Piasecki H-21 copter; unspecified jet-rotor helicopter.

Interesting angle: The Army is going to spend more money for air this year than it has since the Air Force was separated. They expect to be able to replace some trucks with copters, save up to 15% on truck orders.

PLANES IN THE NEWS: *McDonnell FH-1 Phantom* and *North American FJ-1 Fury,* veterans of long service with Fleet units and Naval reserve, finally were retired from active duty. . . . Dual delta is *Avro's new 707C,* side-by-side trainer for the RAF. Most obvious change is cockpit design. . . . Snappier *Swift* is Supermarine's new Mk. 4 version of the RAF standard fighter. Plane has new flying tail to cure stability troubles at high speed. Avon turbojet by Rolls-Royce has afterburner. Wings have more sweep on inboard sections, mount paired wing fences outboard. . . . Prototype hot-rod attack plane is *Douglas A4D* now being built according to Ed Heinemann's ideas at Douglas' El Segundo. Plane is reported to be simpler, smaller and stripped. . . . Last *Republic F-84* Thunderjet—No. 4,457—rolled off the line at the Farmingdale factory. . . . First flight for the Martin B-57A, the Americanized Canberra. Powered by Buick-built Sapphire J65 turbojets, the night intruder is expected to have somewhat better performance than the RAF version because of improved power-weight ratio.

WILD RIDE was shared by nine Convair crewmen in the XP5Y turboprop flying boat when the tail trim mechanism failed. For about half an hour, they rode out a series of near-vertical climbs and dives. Huge craft climbed nearly 5,000 ft. straight up once during the hairy performance. After almost thirty minutes, pilot ordered the bailout, and the crew hit the silk seconds before the plane hit the water.

SEA DART UNSEALED: Navy finally let Convair demonstrate its F2Y-1 for the public after everybody around San Diego had

(*Continued on page* 69)

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WEIGHT	28 oz.
AREA	550 in.
ENGINE SIZES	.29.35 cu. in

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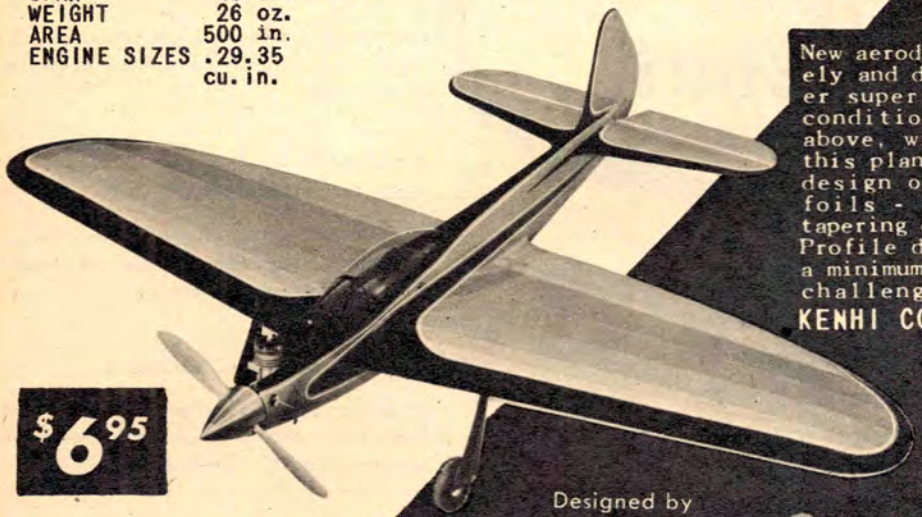
PANTHER

SPAN	48 in.
WEIGHT	26 oz.
AREA	500 in.
ENGINE SIZES	.29.35 cu. in.



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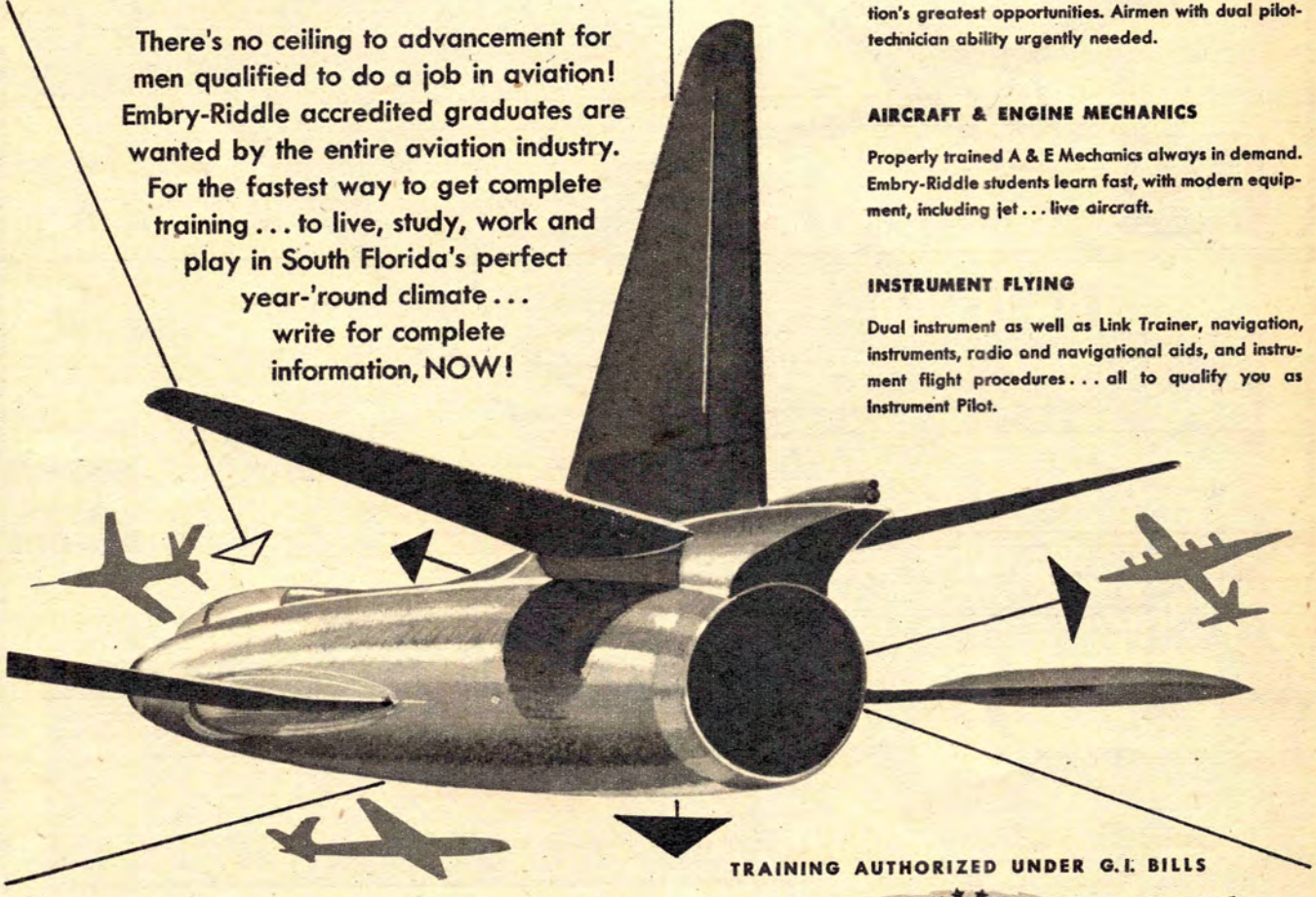

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Elmira's Greatest Soaring Nationals

■ Photo-wise, you are here practically aboard the tow plane that is drawing Champion Paul MacCready to release point in the 20th annual National Soaring Contest held this past summer at Elmira, N. Y. Although MacCready won the ten-day meet, the perfect weather (single rainy day being ignored) received maximum score for aid in making this affair one of the most successful yet. In the seven actual contest days, 31 pilots flew a total of 9868 miles and logged up 400 hours of air time. There were three flights of more than 200 miles, and 37 of well over 100 miles. The meet winner reached 14,000 feet, the highest altitude, and several topped 10,000.

Two types of competition were held—task and open. On task days the contest committee named the type of flying to be done. On open days the pilots chose their own whether straight-line distance flights to predetermined places, triangular course, or goal and return.

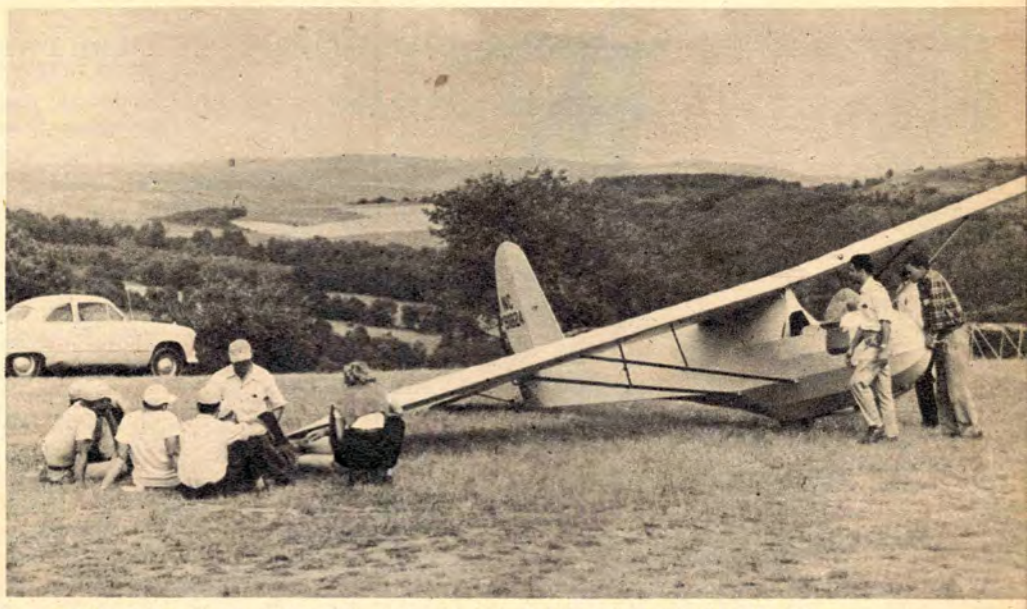
The first day of the contest was declared open to allow pilots to compete in an extra-curricular award, the $300 in cash prizes offered by National Airlines to the two pilots making longest flights to any of its several terminal fields as far distant as that at Norfolk, Va. The winners made it to New York's Idlewild—Stanley W. Smith, chief design engineer for Bell Aircraft, piloting a Schweizer

Two champions: Left is Betsy Woodward, who retained her women's title and whose best flight was 171 miles. The studious looking gent in glasses is the National Soaring champion Paul MacCready, Jr. Above, sailplanes on flight line waiting for their turn to take off. Nearest ship is Larry Gehrlein, Sr.'s 1-23, with Paul MacCready's 1-23D the next.

1-21, and Cmdr. H.C.N. "Nick" Goodhart of the British Royal Navy on detached service in Washington, in an ancient surplus Laister-Kauffman LK-10A. Stephen J. Bennis also landed at Idlewild in Schweizer 1-23D. The distance from Elmira is 191 miles.

A task event which made the boys really push for their points was "one-and-a-half" goal and return to Norwich, N. Y.—Elmira-Norwich-Elmira-Norwich. MacCready was the only one who completed that shuttle trip. Chief mystery of the day was how Bill Beuby of Tulsa,

ALL PHOTOS BY BERNIE SCHOENFIELD



Time out for a bit of ground flying. A group of pilots and crew in front of a Schweizer 1-19 utility glider indulge in a bull session while waiting for thermals to pop. Several 1-19s were in the contest, one flown by Larry Gehrlein, Jr. age 17, a Silver "C" pilot.

British Royal Navy Cmdr. Nick Goodhart (rt.), assisted by Al Schmid of Philadelphia Glider Council lead the LK to take-off line. In this ship, Goodhart reached Idlewild field.

"Whatsit" was the name of the 15-year-old Martin-Jensen sailplane flown by Emil Lehecka. On the first day of the meet, he soared the ancient warrier 158 miles to Morristown, N. J.

Okla., spent his time—he covered 49 miles in a little over 7 hours, flying a German Weithe sailplane.

Most interesting event was the triangle course race whose points were at Elmira, Ithaca and Oswego. The 85-mile course had to be flown twice with final landing at the contest site, Harris Hill. MacCready was the winner of the day, with an almost completed second lap. A goal flight of 150 miles to Rochester and back was almost made by

Schweizer 1-23-D flown by Steve Bennis who placed fourth, flying 850 miles in seven days. The "D" is an improved version of the standard 1-23, has a 50 ft. wing span and square tips.

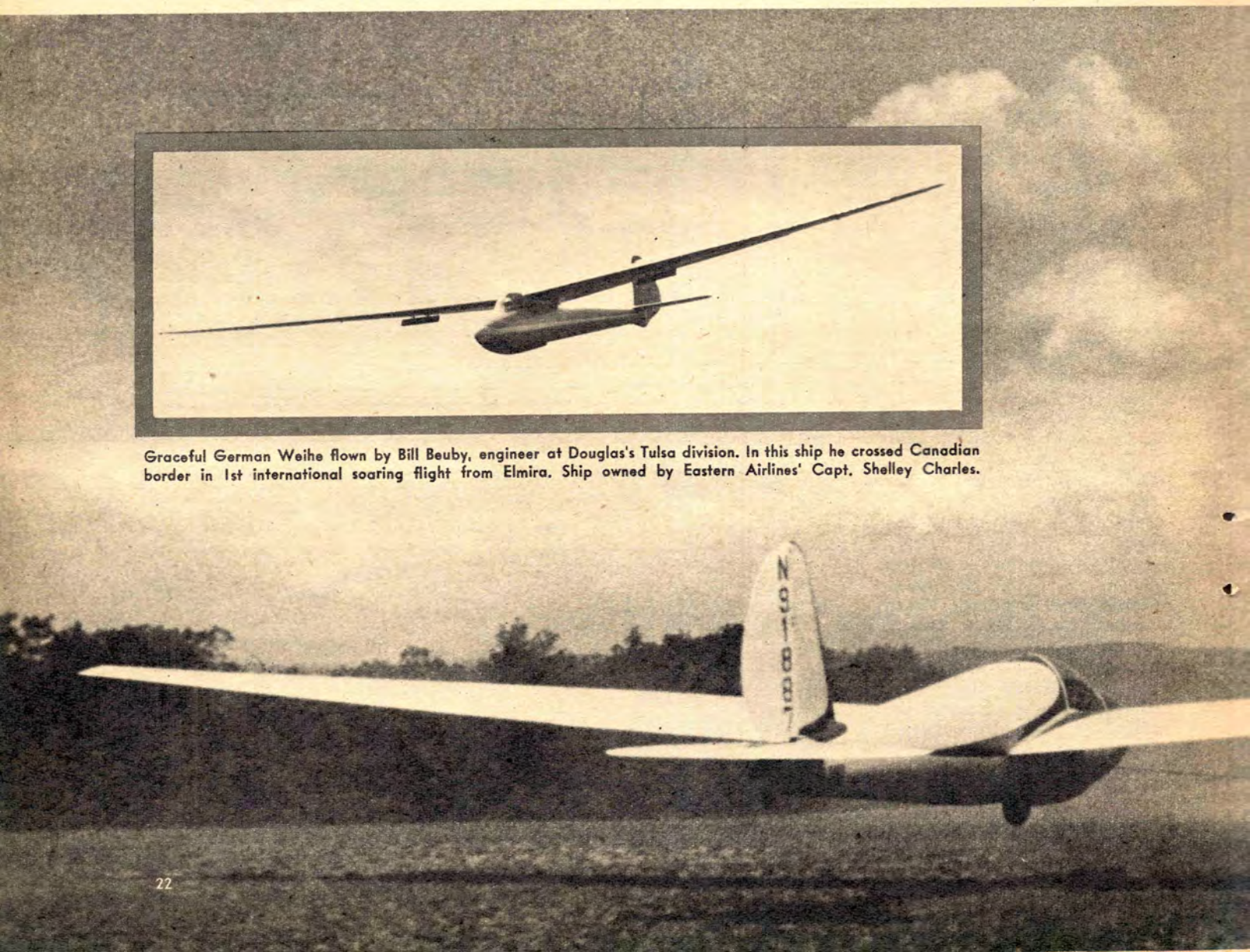
Paul Schweizer, who landed at nearby Corning, N. Y. That same day Bill Beuby, no longer seeming to fight a delaying action, flew 128 miles to Chippewa, Canada.

Last day of the meet was pilot's choice, with some electing Utica and return as their worthy goal. Utica was reached by MacCready, but he could not make it back; his distance was 105 miles. Bill Coverdale got 97 miles, landing at Brookfield, N. Y., Paul Schweizer 96 miles (Waterville, N. Y.) and Steve Bennis 82 miles (Unadilla Falls, N. Y.).

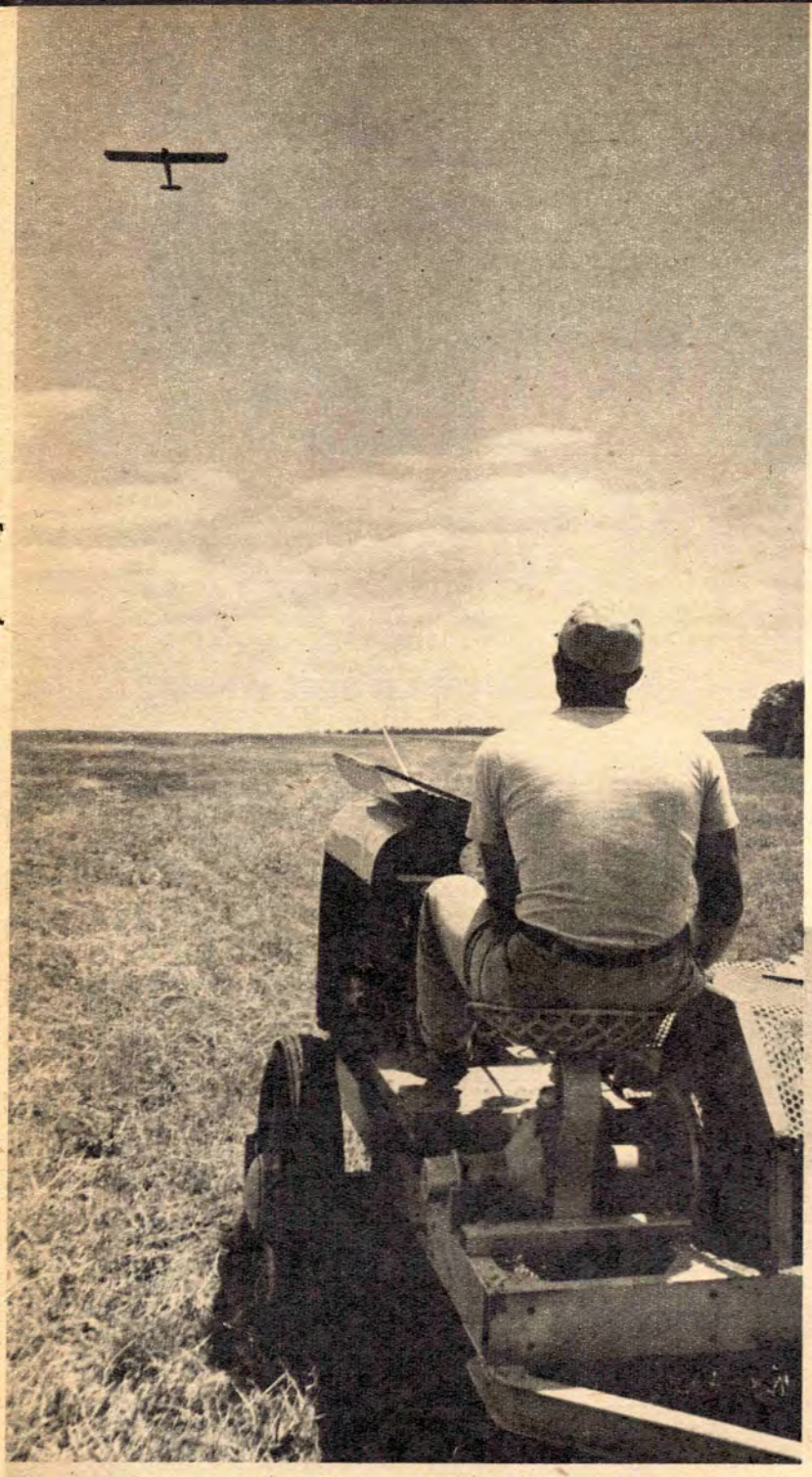
Although MacCready assumed and kept the lead from the first, he had to fight for every inch of it. Smith, Schweizer and Bennis took turns being hard at his heels, and second, third and fourth positions changed frequently. MacCready's superb meteorological know-how added to his soaring skill earned him the victory as National Soaring Champion—the third time he has gained the honor. He was awarded the Richard C. duPont Memorial Trophy and a score of cash prizes. Stanly Smith took second place, Paul Schweizer third, and Stephen Bennis fourth.

The Donald W. Douglas Championship Soaring Trophy was won by the Metropolitan Airhoppers Soaring Association represented at the contest by Stephen J. Bennis, East Orange, N. J., Emil Lehecka of Long Island City, N Y., and Theodore Pfeiffer of Ridgewood, N. Y. Betsy Woodward, Riderville, Md., the only woman contestant, retained the women's championship.

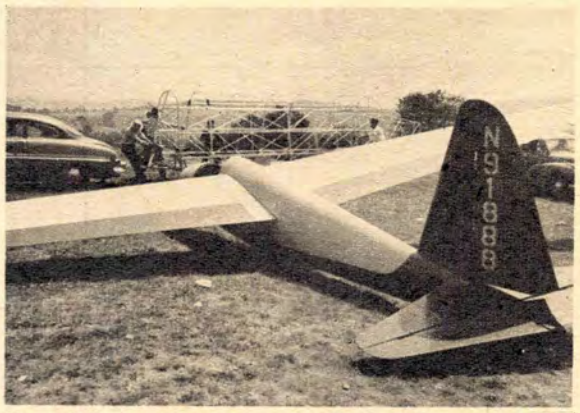
The contest was organized by Elmira Area Soaring Corp. and sponsored by Soaring Society of America.



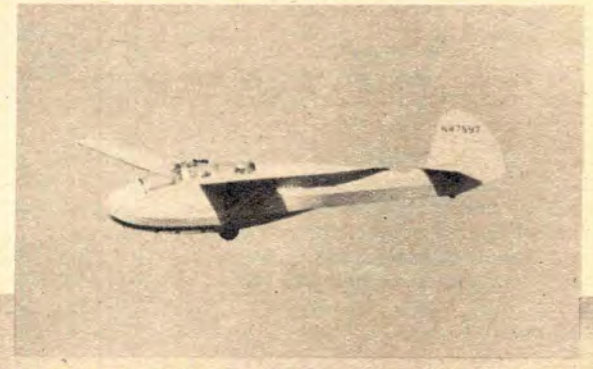
Graceful German Weihe flown by Bill Beuby, engineer at Douglas's Tulsa division. In this ship he crossed Canadian border in 1st international soaring flight from Elmira. Ship owned by Eastern Airlines' Capt. Shelley Charles.



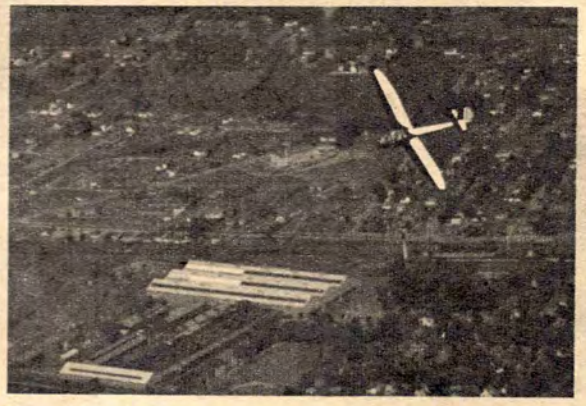
A glider is gaining altitude on winch tow. This method was not used for contest flights, but demonstrated to show different types of launching.



Howard Burr's 1-24 based on 1-23 design. Wings are 55 ft. in span; the nose is extended 10½", different rudder.



TG-2 owned by Vultures Inc. glider club of Buffalo, N. Y. Eight clubs competed at Elmira for the Donald W. Douglas Trophy.



Yes, gliders do fly over cities. Here's Dale Gustin's Pratt-Read circling in a thermal over the industrial section of Elmira.

Joe Foster of San Jose, California, last year's National Champion, with his winning Wakefield model which returned the "old mug" to the U.S. At left is F.A.I. gas champ Joe Kneeland; Montplaisir, right.

U.S.A. WINS F.A.I. GAS AND THE WAKEFIELD

Victory at Long Last!

by BILL FLETCHER & CARL WHEELEY

■ On arrival at London on Friday, July 31, the United States F.A.I. Free Flight Gas and Wakefield Rubber international competition teams were confronted with what could be considered typical English weather (intermittent rain and wind with a temperature which was not comfortable). Fortunately, at least for the U.S. teams, the weather took a turn for the better and Saturday was an excellent day for processing models and test flying. The English were amazed that the weather improved Sunday, the day gas models were flown.

Dave Kneeland, who hails from Hickman Mills, Mo., just outside of Kansas City, turned in three perfect flights of 5 minutes each to win the F.N.A.F.O.M. Cup for the United States. His perfect time plus that of our other gas team members, Stan Hill of Santa Barbara, Calif., who placed 6th with 12:02, Joe Elgin of Cleveland, O., 11th with 11:45, and Carl Wheeley of Washington, D. C., 18th with 10:15 cinched the team award, the beautiful filigreed gold and silver Franjo Kluz Cup, and gives the United States the privilege of holding the contest in 1954.

Kneeland's top contender was George Fuller of Great Britain who placed 2nd with 13:18, followed by G. Vidossich of Italy with 12:54, P. Buskell of Great Britain with 12:30 and A. Lederer of Austria with 12:27. Though Fuller's flights were very consistent, having times of 4:26, 4:50, and 4:02, his model just couldn't quite get the altitude necessary for the few thermal boosts which produce 5-minute flights.

It is interesting to note that 6 of the 22 maximum flights in the gas event were turned in by the U.S. team. This can be accounted for only by the tremendous amount of altitude the U.S. models were getting. Fuller for instance was turning in very consistent flights but could not quite attain the altitude necessary for a 5-minute flight.

The team championship was decided by the total time of the top three flyers from each country. The U.S. total for gas was 38:47, the 2nd place team, Great Britain, totalled 35:49, and 3rd was Italy with 32:17. Thirteen countries entered the World Championship Free Flight Gas Contest: Austria, Belgium, Finland, France, Germany, Great Britain, Holland, Ireland, Italy, Sweden, Switzerland, U.S.A., and Yugoslavia.

Although Kneeland did come through with three maximums to win, feelings were not too high in the U.S. camp after Kneeland's model was broken beyond repair while test flying. The three maximums were turned in by Dave's one remaining model, "Vapor Trails," which used a "Cumulus" wing and stabilizer with special anti-warp strips. Wing dihedrel was approximately 2" less than that called for on the "Cumulus" plans. The fuselage was Dave's own which was diamond in cross-section except for the front which was rounded off to take a streamlined nose, although it was not used. The pylon was moderately thin and of approximately the same height as the "Cumulus." For the take-off, a single gear with wire skids was used.

The Europeans were very much impressed by the climbs of all the U.S. gas models, each powered by a Torp .15. A loud applause was heard when Stan Hill's "Amazon 400" climbed almost straight up for the full 20 seconds. The headline of the August 2nd "Cranfield Chronicle" read: "AMERICAN TORPEDO SINKS ALL OPPOSITION." Each member of the U.S. gas team had three of the Torps which were exchanged with gas competitors of other nations.

The pressure was on. Would we be able to repeat our previous double win for a cleep sweep? With the break of day Monday, we awakened to a very pleasant surprise — perfect Wakefield weather. Entries (*Continued on page* 64)

America's winning gas team in the international events: from the left, Stan ("Amazon") Hill, Carl (AMA assistant director) Wheeley, Dave (top winner) Kneeland, and Joe Elgin. This quartet brought the Franjo Kluz trophy to the U.S. for the first time. Dave flew "semi-Cumulus".

With full-size "choppers" more and more in the news this informative series will get you started off on the right foot in building your own model helicopter

CLOUGH'S CONCLUDING COMMENTS CONCERNING 'COPTERS

By ROY L. CLOUGH, JR.

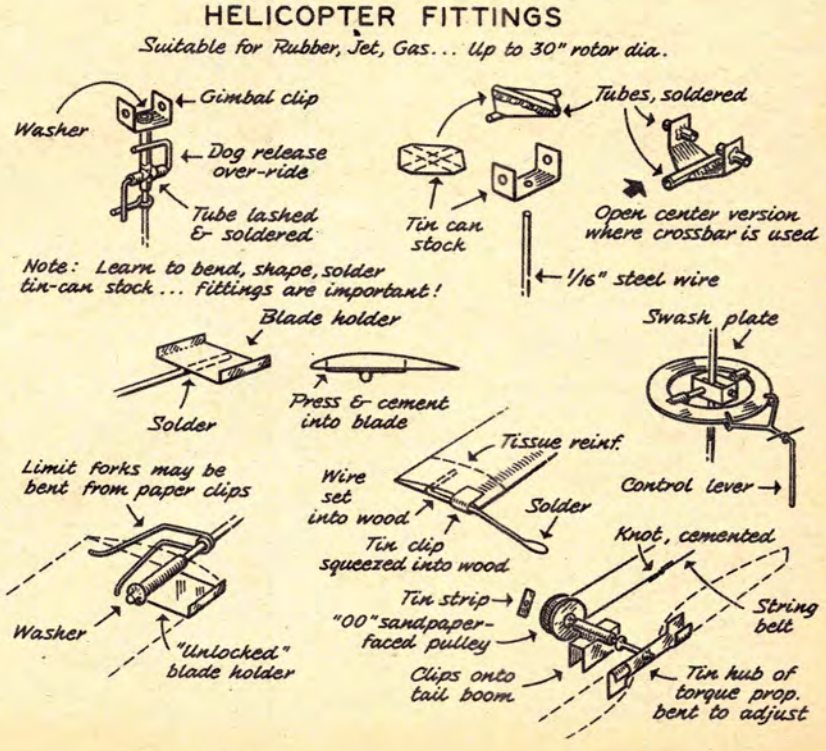
■ Once the reader has flown a rubber job successfully and wants to build a model capable of really big performance, it will be necessary to switch to gas engine or jet power. Let's deal with jets first. The Jetex motor is an excellent source of power for model helicopters; generally speaking two will be used, although it might prove practical to use up to four, although this complicates the problem or getting a number of motors ignited at the same time in order that the charges burn evenly to preserve the balance of the rotor. For that matter a one-bladed rotor, with the blade balanced by the motor, can be used very successfully—which I know sounds a bit contradictory, but the practical fact is that the burning charge getting out of balance in a one-bladed system is considerably less critical than, say, two or three charges consuming at an uneven rate in a multi-blade system.

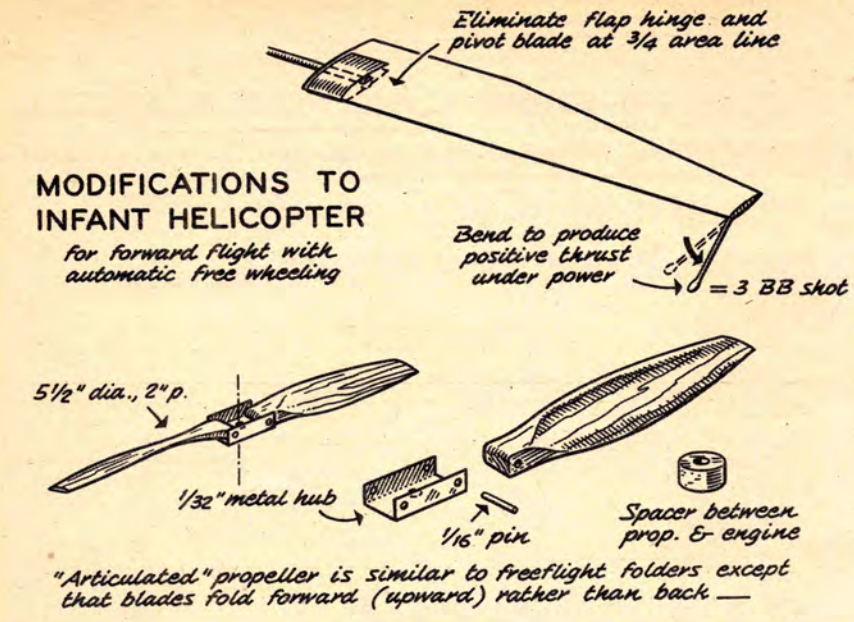
The reason for this seems to be that the thrust output of the Jetex varies according to the amount of fuel left at any given instant, and peaks at the last few seconds. Thus in a multi-bladed system we have several thrust peaks, and if they do not closely approximate each other the thrust load on each blade may vary widely, meaning considerable pitch variations in a dynamic pitch rotor. In a one-bladed, single-motor job, the thrust variation is inherently "in gear" with the single rotor blade. Unbalanced centrifugal loads due to fuel charge consumption result in a narrow period of oscillation of the rotor mast, but since this vibration lies in a spanwise plane the practical effect is not serious—for a model.

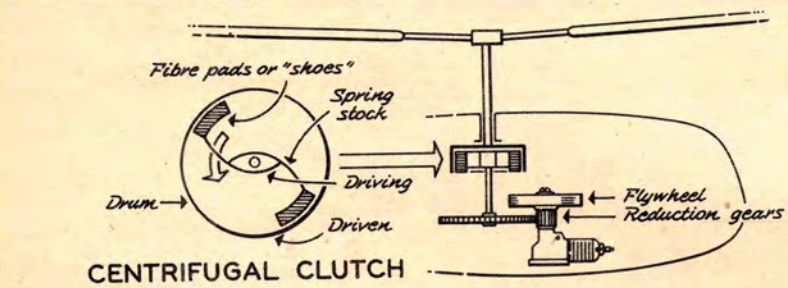
The jets replace the dynamic weights of the unlocked type rotor, being mounted below and ahead of the rotor tips. The angle of thrust should be slightly downward, and it may be necessary to provide up-pitch limit stops to facilitate getting the rotor going. The balance of the rotor blade on its pivot should be slightly nose heavy with fuel charge aboard. Note this, because of the position and forces exerted in this type of rotor it is not necessary to use stable blade sections—use the highest lift cambered section you deem practical and don't worry about pitching moments; the orbiting of the tip weight clamps the blade firmly at whatever pitch the speed and dynamic settings call for, and transition into auto-rotation after burnout is smooth and easy with a good let-down.

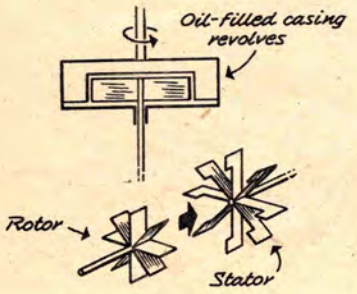
The adapting of a tiny internal combustion engine that screams out its very high power rating at speeds in excess of 10,000 rpm to rotors which run under 2,000 rpm, offers an interesting challenge. This may be achieved in a number of ways.

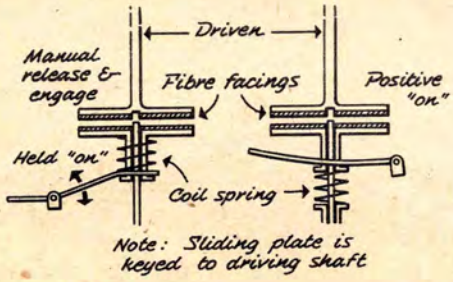
The classical method is to reduce the speed and increase the torque through reduction gears. These should be of at least 5-1 ratio and there must be some sort of clutching arrangement between the gears and the rotor, otherwise it may prove to be impossible to start the motor, or gear teeth will be stripped by the high starting loads. A clutch satisfactory for this purpose should en-

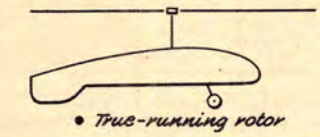


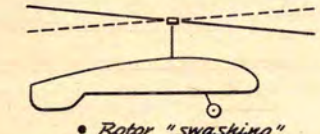

Eliminate flap hinge and pivot blade at 3/4 area line
MODIFICATIONS TO INFANT HELICOPTER
for forward flight with automatic free wheeling
Bend to produce positive thrust under power
= 3 BB shot
5½" dia., 2" p.
1/32" metal hub
1/16" pin
Spacer between prop. & engine
"Articulated" propeller is similar to freeflight folders except that blades fold forward (upward) rather than back —

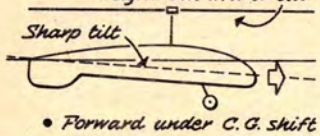


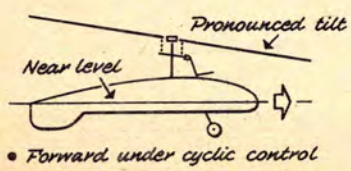


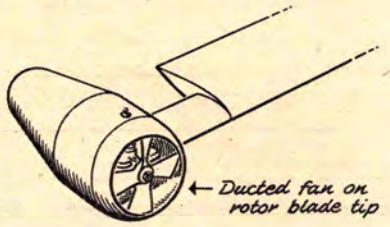


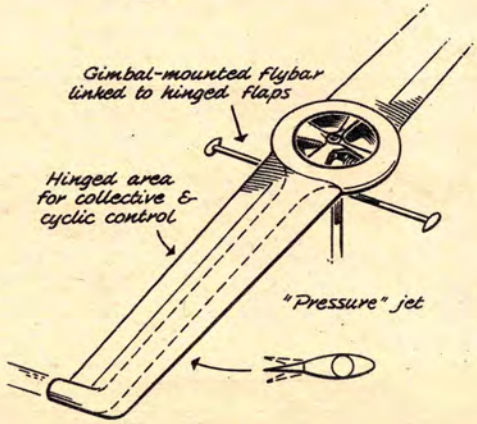












gage smoothly and positively, and may be either of the manual engaging type, in which the release of a lever holding two faces apart permits them to be forced together under spring compression, or of the centrifugal type which engages automatically with an increase in speed. See center sketch on this page.

Clutches require access to tools and a knowledge of machining operations, but this should not deter a really determined builder. The ideal thing, of course, will be for some hep manufacturer to read this and produce a small lightweight clutch-reduction-gear unit at a reasonable price. Experience in the model race-car field indicates this can be done.

Reduction can be had by means of pulleys and belts, with a sliding engine mount serving as a "clutch," but belting is not the most satisfactory power transmission. I have flown a K&B .049 job with belt reduction, briefly. The belt begins to slip after a time and the model descends. For this job I used a round belt running over wood pulleys at 4.5-1 with a heavy application of a good belt dressing. The problem seems to be that the high speed of the engine pulley soon glazes the belt, causing excessive slippage. Howard G. McEntee has suggested using small Vee belts. This might work a lot better due to the better traction offered by such a belt, but obtaining Vee belts and pulleys small enough for the purpose has been a poser. When using belt drive with gas engines, great precautions must be taken to keep fuel spray off the belt and pulley. A baffle between the shaft and intake tube and exhaust ports is highly necessary, and frequent wiping of oozed oil from the end of the main bearing is a must.

Another angle which I've been experimenting with lately is to use a torque converter between engine and rotor. A torque converter is simply a specialized type of fluid clutch and operates without any direct connection. I use a small high speed rotor connected directly to the engine shaft, running inside a larger rotor which is connected to the helicopter end. The casing is filled with castor oil. This device, in bench tests, appears to transmit a fair amount of power—with redesigning and a bit of finagling it should be quite efficient. However, I have had a lot of trouble due to overheating, which causes some of the oil to ooze out past the bearings, and that results in lowered efficiency of power transmitted.

In any event power for the torque prop isn't hard to arrange. Turn this about two to three times as fast as the main rotor by means of a simple string belt running over sandpaper-faced pulleys. Remember that the torque prop should stop when the model goes into autorotation in order that it won't swing the tail around in a circle on the way down. Simply attach the driving pulley between the clutch and the ride-out dog of the rotor. We mentioned this before, the rotor release. Whether or not you plan for autorotation you must have a rotor release which permits the rotor to override when the power quits. (*Continued on page* 66)

The NATIONALS!

■ It is only fitting and proper that the Nationals should begin with the indoor event. This event has been with us since the Nationals began, and it is the only one in which the models are not handicapped in fulfilling their basic function: defying gravity for maximum possible time.

The event at the Lakehurst hangar seemed like a reunion of the indoor alumni responsible for the development of indoor models as we know them. Some came as flyers, others as spectators and officials. Among the flyers we found Bill Tyler who used to represent Boston; John Zaic, New York Aeronuts; and Pete Andrews and Tony Becker, Philadelphia. Jesse Bieberman had his old job as contest director with assist from Mayhew Webster, Erv Leshner and others. If one could forget war years, wrinkles and grey hairs, the event seemed more like one of the pre-war record trials at which the records were pushed higher and higher from the reach of beginners.

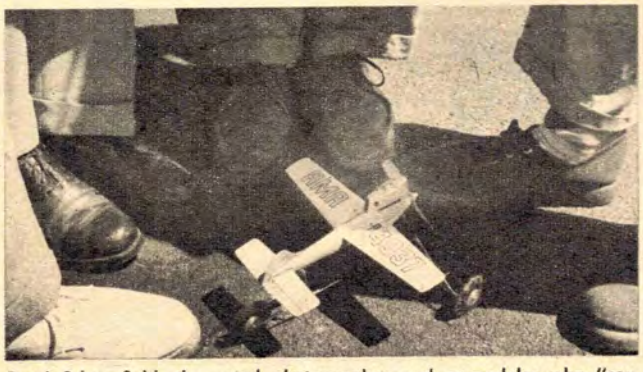
YOUNG MISTER WRIGHT

Busiest man in free flight was the much beloved builder from Topeka, Kan., C. O. Wright. Everybody wanted to talk to him (as did Ed Al Lewis, left); then C.O. is shown with his Half-A "Spacer" ("built it just as Sal directed"); next PAA ("this is a design by Herb Kothe"); finally his Super Cruiser for the Half-A flying scale event. His battery box has home-made voltage regulator.

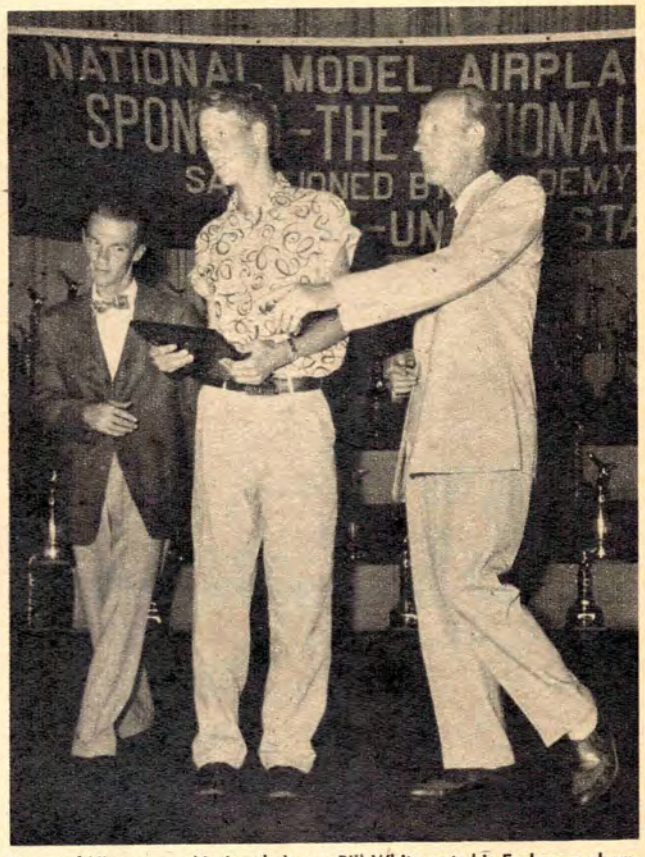
THE NATIONALS! . . . Photos by SCHOENFIELD

Attending or competing in an indoor meet is an experience not easily forgotten. Time seems stretched out, and the day never ends. It's almost like living in a fish bowl. All motions are slow. Men on the bottom, or floor, move with a snail-like pace, while the models just drift around and around. At this particular meet, Dick Querman heightened the effect by flying his slowly moving helicopter.

Don't think excitement is lacking. As a model gradually spirals toward the treacherous roof, one begins to anticipate the troubles it may encounter before it completes its flight. Will it go up and down without touching the ceiling or sides? Or will it be snagged when it is just about to break a record or beat the previous best time? There are times when the model drifts toward the sides with each succeeding circle bringing it closer to disaster. If (*Continued on page* 54)

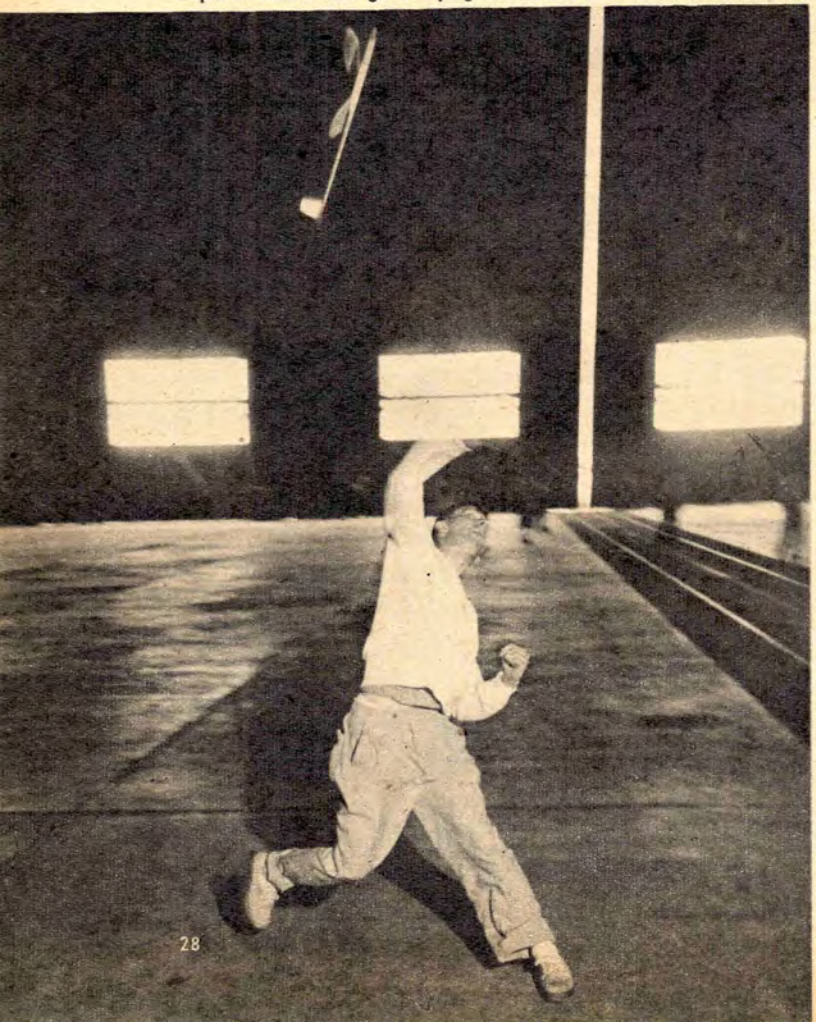


Berni Schoenfield, the noted photographer and ex-modeler who "covered" the Nats for "AT," was impressed by the minute size of the Half-A speed entries. This one by AF flyer Tommy Baker was among neatest.



Dance of Victory . . . National champ Bill White gets his Exchange championship plaque from contest director Matt Sullivan (right) while AMA president Keith Storey looks as if he's cutting in for the next number.

Airman 3/C Stuart Savage of Wright-Patterson AFB who shared senior champ honors with Ron Plotzke of Detroit demonstrates the proper technique in indoor H/L glider flying. He did 52.8; winner turned in 69.6.



For carrier flying John Albertson (left) of Arlington, Va., entered this F7F which used two K&B '32's. One engine cuts for low speed run and deck landing. David Domizi, Rocky River, O., won with 391.5 points.

Dick Querman of Long Island City attempted to better the existing record for indoor helicopters but missed the mark by a narrow margin. At right is Jesse Bieberman of old Phila. Gas Model Assoc., who directed indoors.

"Tennie" and the Nordic. Mrs. George Perryman launches husband's Nordic glider which after meet went to Yugoslavia along with George to compete in international event. His trip sponsored by Lockheed.

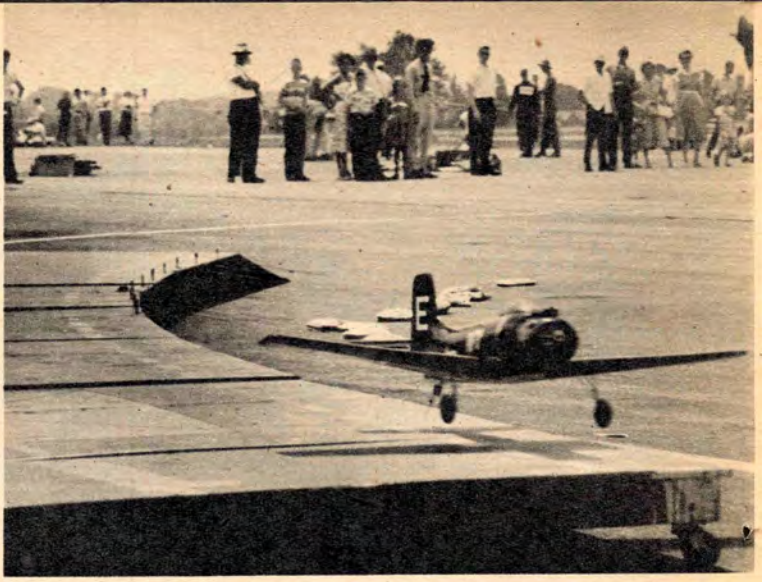
And away she goes—or, look, Ma, no hands! Bill Fletcher shows how to get a Wakefield off accordin' to the rules. Fletcher left Nats for England where he served as captain for U. S. group, which won team honors.

Scale director Vic Fritz (lt.) and Ann Hauze of Phila. MAA check over Thomas Dean's first place Aeronca crop duster. Al Rubin (rt.), one of busiest officials, and Pete (Indoor Champ) Andrews also admire it.

Winner of the Hiller Model Helicopter competition was Parnell Schoenky of Kirkland, Mo., who works for McDonnell Aircraft. His 121.41 points put him far out in front. Dave Call, the meet official at left, handled event.

THE NATIONALS!

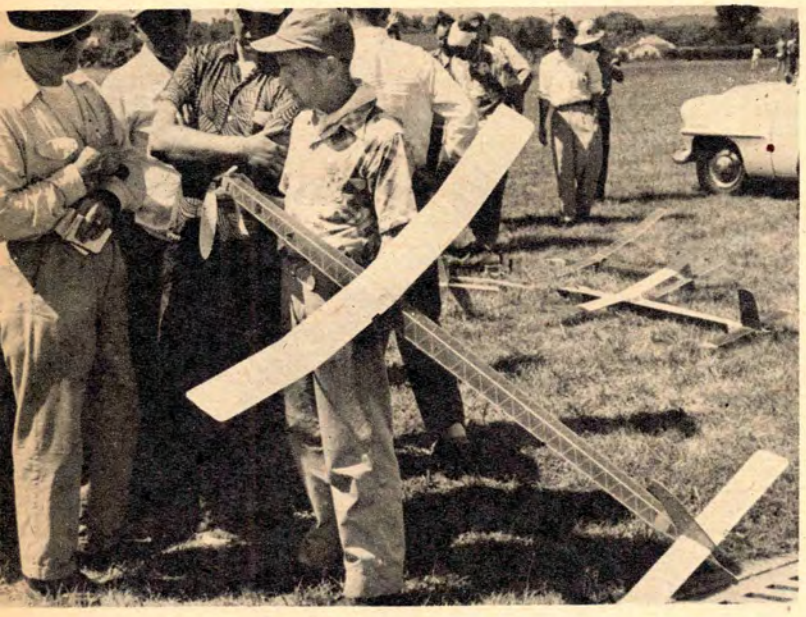
Sal (Spacer Chaser) Taibi, once of Brooklyn, now proud of his adopted California, demonstrates proper rise-off-water technique. Mrs. T. keeps her fingers crossed (lt.). Sal racked up top time in this category—13:00.5.



Neat carrier take-off by Vincent Calano's AD-2 (from "AT" plans). Used Fox .35 with intake butterfly choke for engine control. Hez from Hartford, Conn. Event drew crowd. Nat. champ White won junior ABC carrier.

No, this is not the ROW tank! Just a rainy runway scene last day of contest. Air Force's Al St. Clair of Williams AFB readies his "Neptune" free flight. He couldn't have picked a better name considering weather.

One of the nation's top model designers, Lawrence Conover from Iowa City, Iowa, goes after the ornithopter record. Special attempts at records were permitted throughout meet; the modeler really was king.



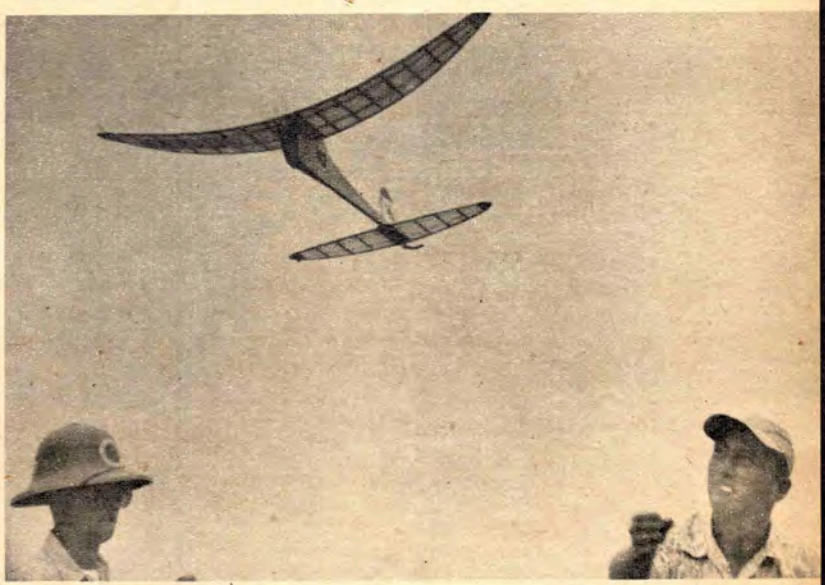
Hal Roth of Richmond, Calif., who walked off with PAA Clipper Cargo (lifting 23.25 oz. for 42 seconds with a Half-A engine) discusses the finer points of his Wakefielder with Frank Zaic (lt.), Nats "AT" reporter.

Half-A flying scale champ Edward Stoll of Detroit testing his Fairchild 24, a modified Berkeley design. Ed's 290.22 points were more than 100 ahead of next contender. Wasp .049; event was flown ROG in drizzle.

Henri Dore adjusts dethermalizer of his Nordic glider. After contest model was shipped to Yugoslavia to be flown by proxy in international A/2 contest. Jasco's John Zaic (rt.) helps while brudder Frank holds line.

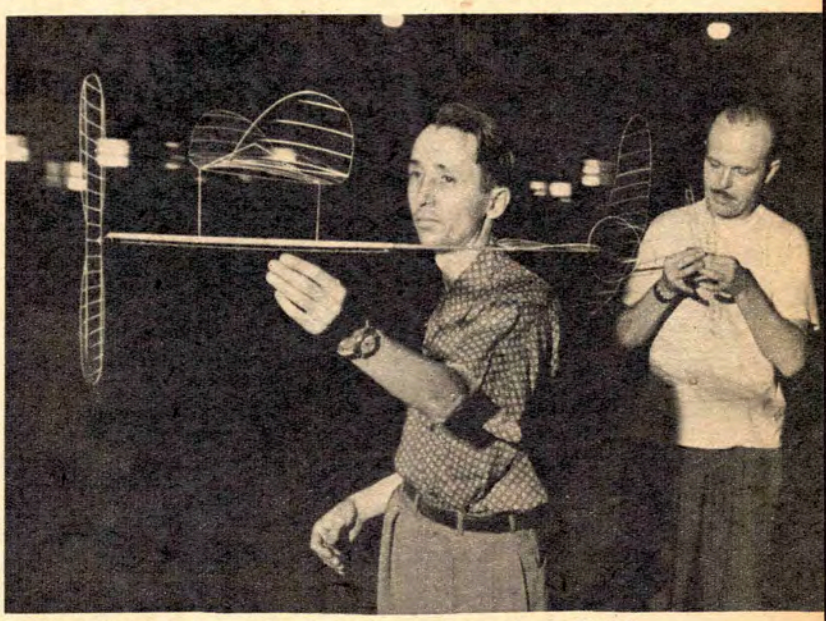
Two-time flying scale champ Thomas Dean of Corpus Christi (lt.) dries off his Aeronca "duster" model. Power was Cameron .19. Everything works on model including prop on duster bin, tiny seat belts, shock absorbers.

Grumman Avenger entered in flying scale event by Robert Fritsch, Camden, N. J. Number of entries in this event was less than in '52 despite change in rules which eliminated stunt and required only 10 laps by each man.



Tom Henebry (see "From the Reader" last issue) launches his elliptical dihedral Half-A free flight. Tom is all-round builder, a CPO in the Navy from Chula Vista, Calif. His designs were all finished beautifully.

She went thataway—the wing, we mean. "Thataway" being backwards! This sad episode was staged by Robert A. Jones of Norfolk, Va. Rubber band which was holding wing at launch time is blurred streak.



Merrick S. "Pete" Andrews of New York City with his big Class D 30:15.5 microfilm-covered stick model, high timer of indoor events. "AT's" Bill Tyler readies his Class B job (rt.). Andrews is world's finest "mike" man.

TAPER WING WACO

A grand old bipe, favorite of many a famous stunt pilot, returns as a slick control line flying scale powered with .29 to .32 engines

■ If you were old enough to tie your own shoelaces when "Lucky Lindy" made history in 1927, then you might recall the era of the stunt biplane, exemplified by the Waco Taper Wing.

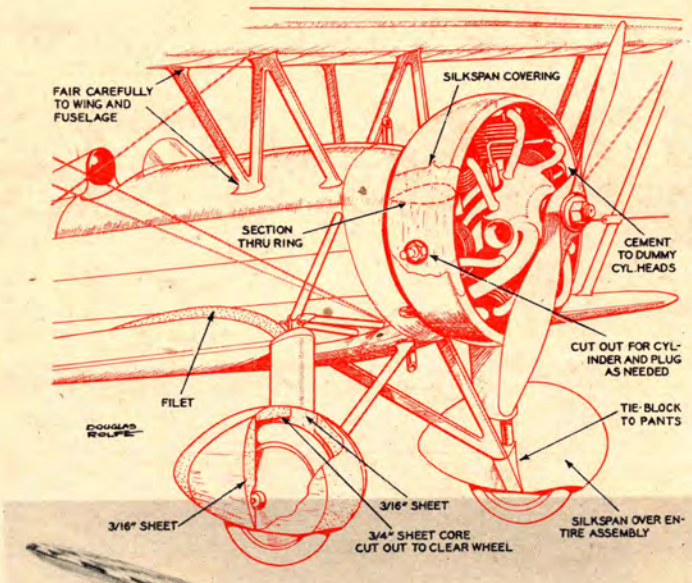
Even if you can't remember "the good old days" you can see what a fine model this Waco is for stunting or for real detailed scale flying. With no apparent dihedral, an almost-symmetrical airfoil, and with its landing gear well forward, the WTW makes an excellent subject for U/C work. The Taper Wing, with its generally clean shape and efficient tapered wings, was a great improvement over its predecessor, the Waco 10.

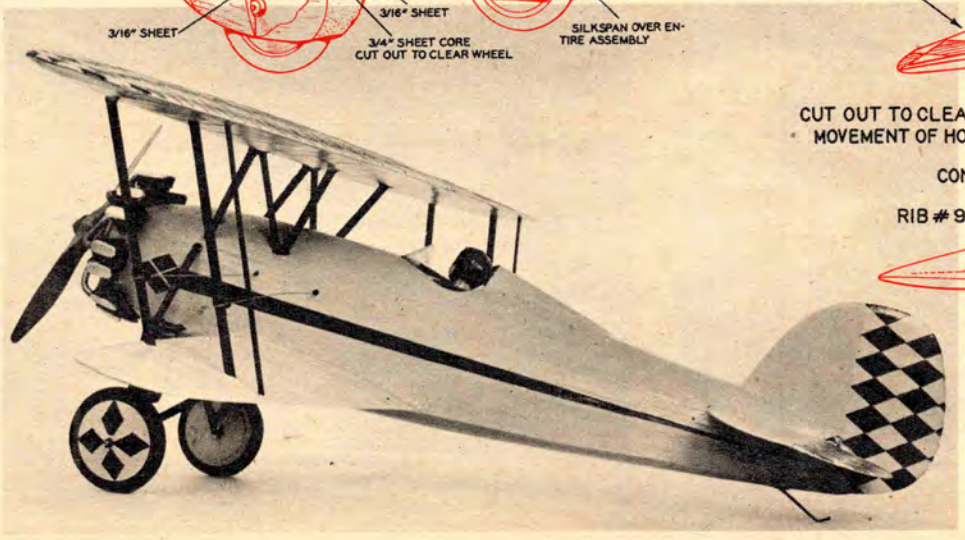
Two models made by the author logged more than 150 flights, with one model taking stunt and scale honors in the same contest. The hot rock stunters can go easy on the superdetails for a lighter, more maneuverable ship. But loading the ship down with wheel pants, cowl ring and such will not take the edge off its stunting ability—it will still turn inside the other scale jobs and match some of the flying barndoors in intricate acrobatics.

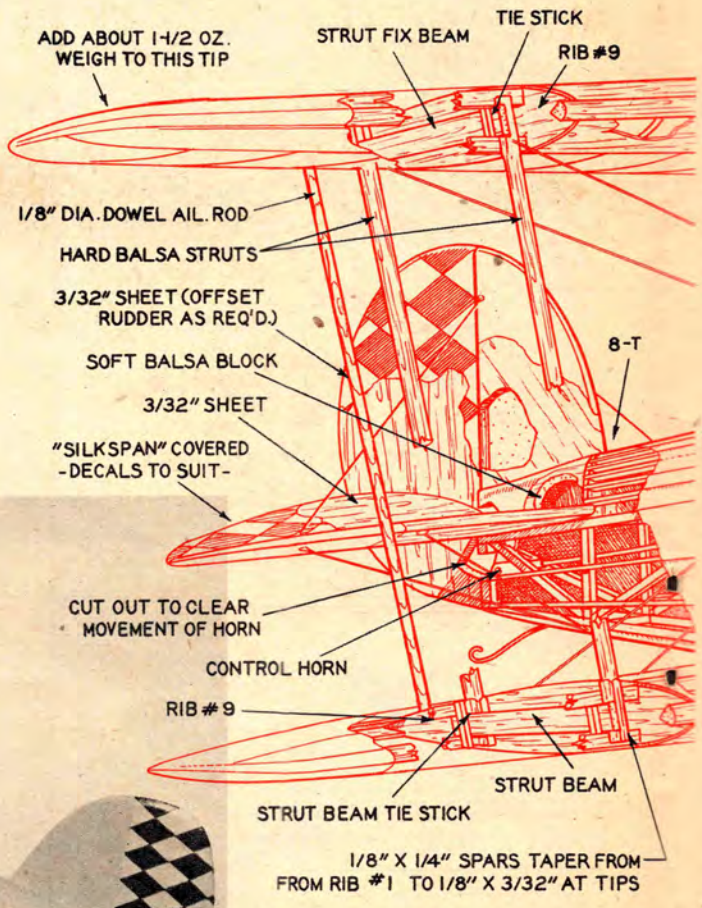
Testing should be done with the usual balloon type wheels, the home-made scale type being saved for competition work. If wheel pants are used, stock wheels can be employed, as they will not "show" and a lot of work can be saved. Remember, with or without cowl and pants, the job is still true to scale, as the prototypes were flown both ways.

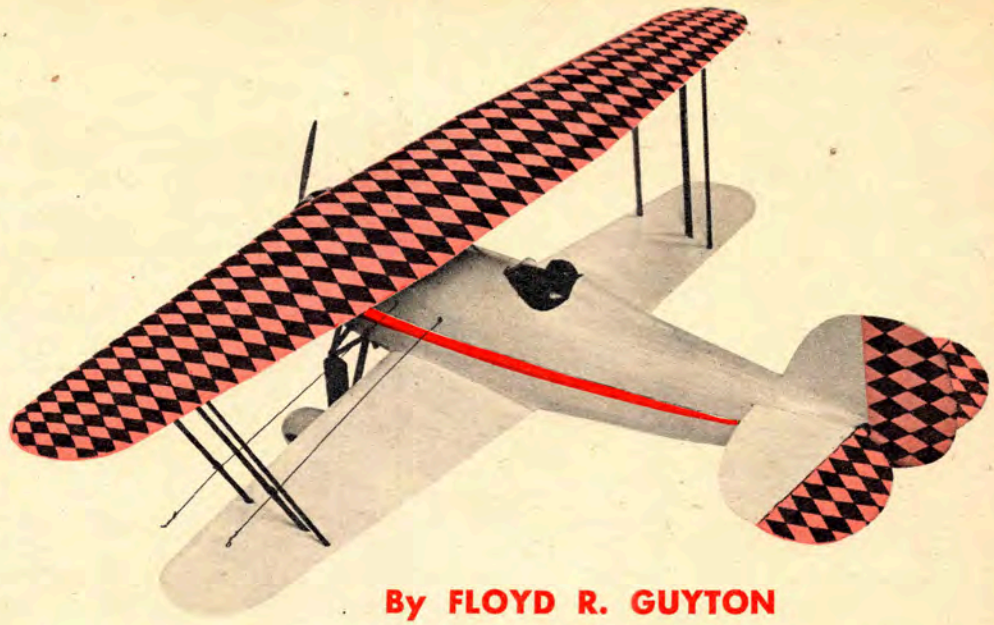
Now let's get a-building. Grab some ⅛" square balsa, but *hard*. The basic framework can be tossed together as per the side view. Allow the longerons to project slightly forward of Station 3, as they fit into notches in F3. Once all the required cross braces and diagonals are in place, allow the cement ample time to dry thoroughly and remove from workbench. Building both side frames at once insures *exact* duplication, so play safe and do it that way.

Use a thin razor blade to separate the two frames and start assembly in the orthodox manner, tail-first. Work forward carefully, checking each frame for squareness as you go along. Note that the cross pieces at Station 3 are not equal, due to slant. If desired, diagonals at each station will help rigidity immensely, especially at Stations 5, 6, and 7. Hard 1/16" x ⅛" balsa is fine for this; it can be left in permanently if not in the way of the push-rod, or cut out when the fuselage is partly covered and has greater torsional rigidity. The plywood bulkheads F3 and






ADD ABOUT 1-1/2 OZ. WEIGH TO THIS TIP
STRUT FIX BEAM
TIE STICK
RIB #9
1/8" DIA. DOWEL AIL. ROD
HARD BALSA STRUTS
3/32" SHEET (OFFSET RUDDER AS REQ'D.)
SOFT BALSA BLOCK
8-T
3/32" SHEET
"SILKSPAN" COVERED -DECALS TO SUIT-
CUT OUT TO CLEAR MOVEMENT OF HORN
CONTROL HORN
RIB #9
STRUT BEAM
STRUT BEAM TIE STICK
1/8" X 1/4" SPARS TAPER FROM FROM RIB #1 TO 1/8" X 3/32" AT TIPS



By FLOYD R. GUYTON

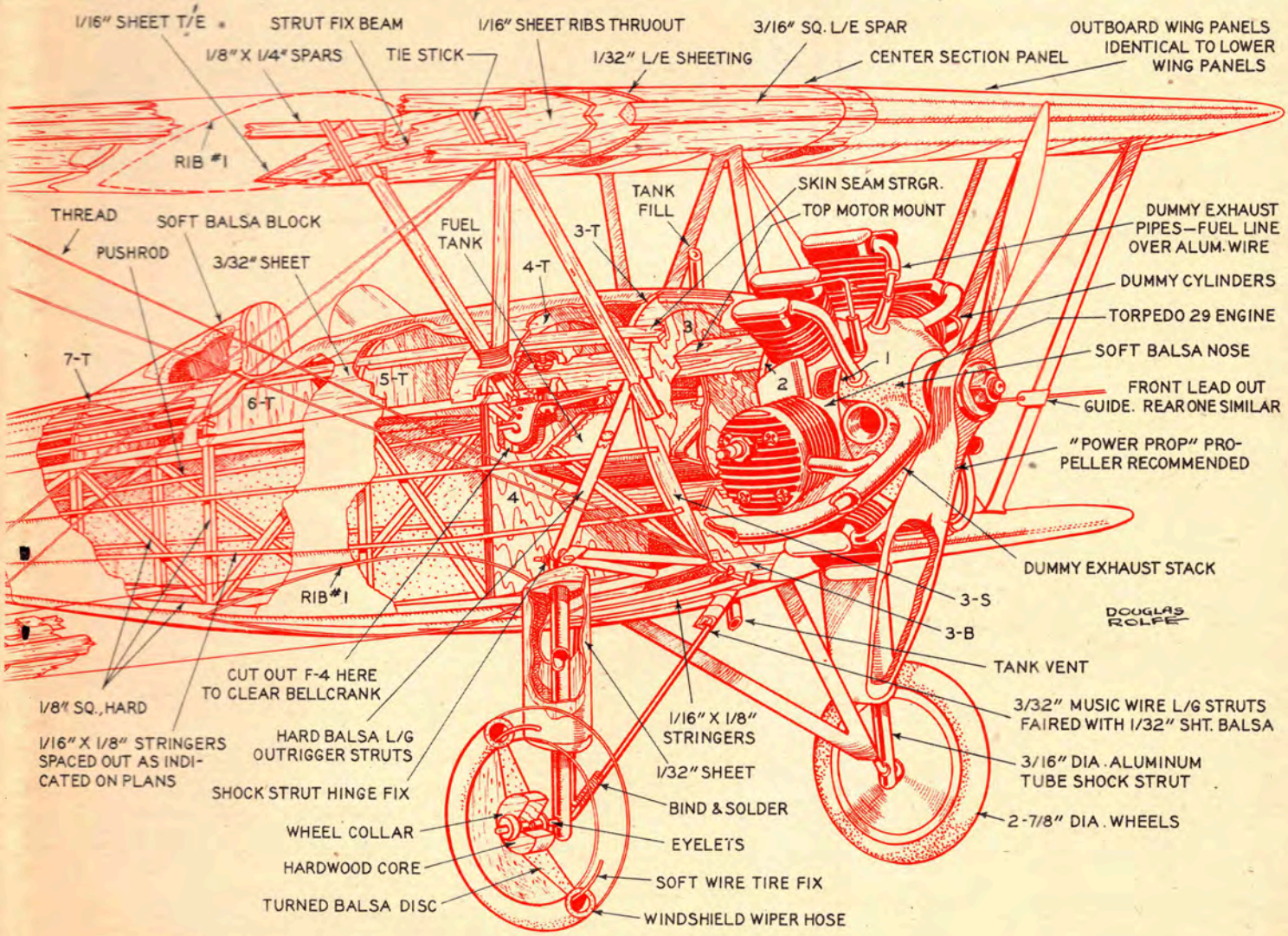
F4 can be slipped in place now and cemented securely. Be sure to get all the holes cut out or drilled through F3 and F4 before assembly.

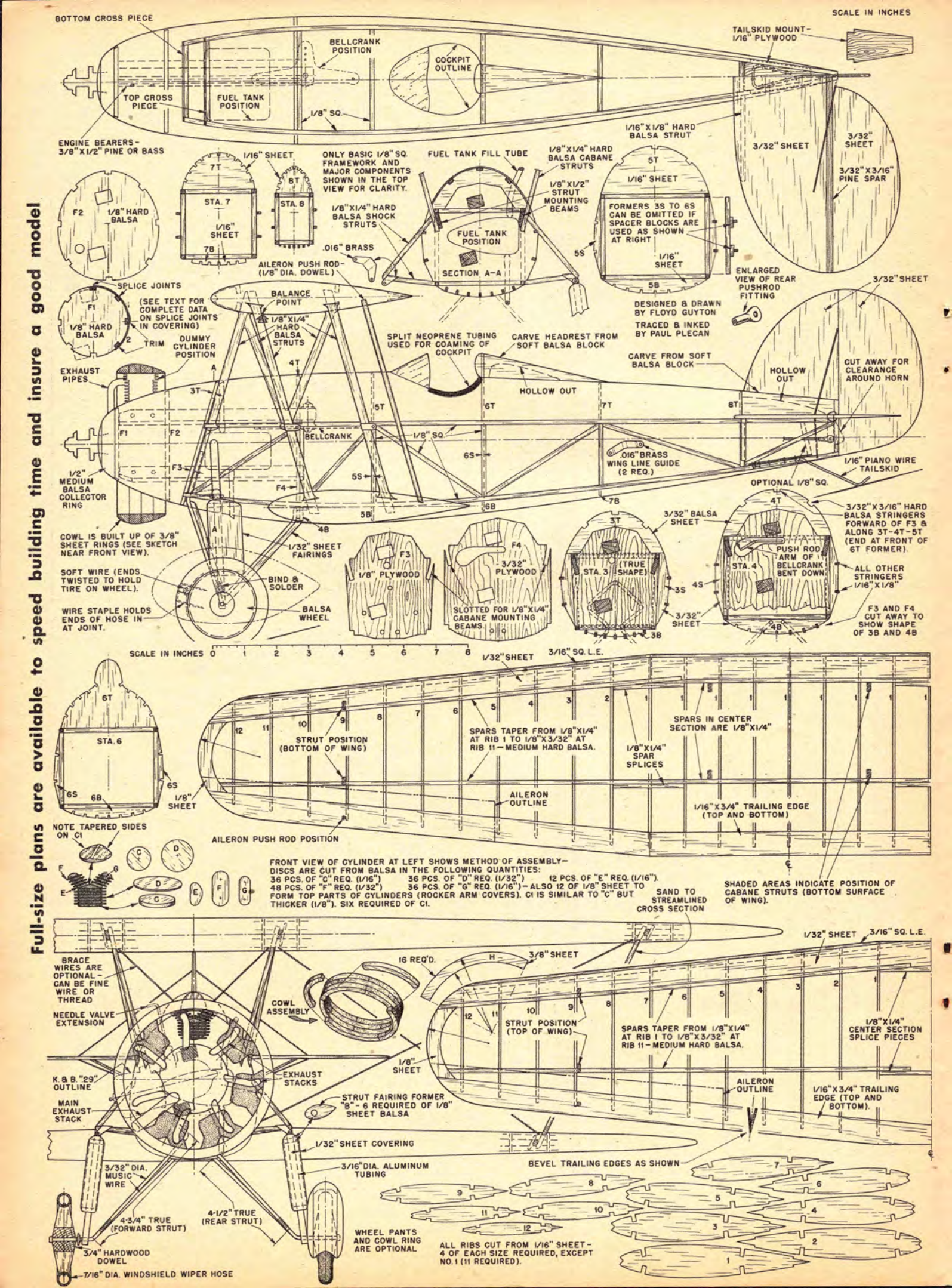
The engine bearers can be slipped in place and cemented next. Note that the upper bearer is longer—extending beyond the rear of F4 to provide mounting space for the bellcrank. The bottom of this bearer is cut away to provide a horizontal surface for mounting aforesaid bellcrank which, incidentally, protrudes through F4 (see gourd-shaped hole made for this). Note that the pushrod arm of the bellcrank is bent down somewhat to clear the upper cross-brace at Station 4. Try to assemble as much of the control system as possible in the early stages of construction, as hooking up the pushrod to the bellcrank and other similar jobs are difficult once the stringers and covering have been practically done. This applies to the lead-out wires also.

The unorthodox position of the engine, with one engine bearer *under* the crankcase lug and the opposite bearer *over* the lug may seem unnecessarily complicated, but it is a fine way of hiding the K&B .29 and providing space for a fuel tank of moderate size, mounted in an ideal position. The usual upright position of a .29 in this ship necessitates running the engine bearers right through that area where the tank should be—level with the needle valve.

However, for some compact engines like the Forster F-29 it shouldn't be much trouble to "pad" the front of F2 with a slab of ⅜" plywood for a radial type mounting for even greater latitude in positioning the tank. In the event that you rework the nose section for radial mounting, remember to beef up the construction enough to compensate for the absence of engine bearers. And leave the bellcrank where it is, regardless of what rework you do in other departments.

After bending the landing gear to shape, install (*Continued on page* 74)




SCALE IN INCHES
BOTTOM CROSS PIECE
BELLCRANK POSITION
COCKPIT OUTLINE
TAILSKID MOUNT-1/16" PLYWOOD
TOP CROSS PIECE
FUEL TANK POSITION
1/8" SQ.
ENGINE BEARERS-3/8"X1/2" PINE OR BASS
1/16"X1/8" HARD BALSA STRUT
3/32" SHEET
3/32" SHEET
3/32"X3/16" PINE SPAR
1/16" SHEET
ONLY BASIC 1/8" SQ. FRAMEWORK AND MAJOR COMPONENTS SHOWN IN THE TOP VIEW FOR CLARITY.
FUEL TANK FILL TUBE
1/8"X1/4" HARD BALSA CABANE STRUTS
1/8"X1/2" STRUT MOUNTING BEAMS
1/8"X1/4" HARD BALSA SHOCK STRUTS
FUEL TANK POSITION
SECTION A-A
FORMERS 3S TO 6S CAN BE OMITTED IF SPACER BLOCKS ARE USED AS SHOWN AT RIGHT
1/16" SHEET
F2
1/8" HARD BALSA
STA. 7
STA. 8
.016" BRASS
AILERON PUSH ROD-(1/8" DIA. DOWEL)
SPLICE JOINTS
(SEE TEXT FOR COMPLETE DATA ON SPLICE JOINTS IN COVERING)
F1
1/8" HARD BALSA
TRIM
DUMMY CYLINDER POSITION
BALANCE POINT
1/8"X1/4" HARD BALSA STRUTS
SPLIT NEOPRENE TUBING USED FOR COAMING OF COCKPIT
CARVE HEADREST FROM SOFT BALSA BLOCK
CARVE FROM SOFT BALSA BLOCK
HOLLOW OUT
CUT AWAY FOR CLEARANCE AROUND HORN
ENLARGED VIEW OF REAR PUSHROD FITTING
DESIGNED & DRAWN BY FLOYD GUYTON
TRACED & INKED BY PAUL PLECAN
3/32" SHEET
EXHAUST PIPES
BELLCRANK
1/8" SQ.
.016" BRASS WING LINE GUIDE (2 REQ.)
1/16" PIANO WIRE TAILSKID
1/2" MEDIUM BALSA COLLECTOR RING
OPTIONAL 1/8" SQ.
3/32"X3/16" HARD BALSA STRINGERS FORWARD OF F3 & ALONG 3T-4T-5T (END AT FRONT OF 6T FORMER).
3/32" BALSA SHEET
PUSH ROD ARM OF BELLCRANK BENT DOWN
ALL OTHER STRINGERS 1/16"X1/8"
COWL IS BUILT UP OF 3/8" SHEET RINGS (SEE SKETCH NEAR FRONT VIEW).
1/32" SHEET FAIRINGS
SOFT WIRE (ENDS TWISTED TO HOLD TIRE ON WHEEL).
BIND & SOLDER
WIRE STAPLE HOLDS ENDS OF HOSE IN AT JOINT.
BALSA WHEEL
F3
1/8" PLYWOOD
F4
3/32" PLYWOOD
SLOTTED FOR 1/8"X1/4" CABANE MOUNTING BEAMS
STA. 3 (TRUE SHAPE)
STA. 4
F3 AND F4 CUT AWAY TO SHOW SHAPE OF 3B AND 4B
SCALE IN INCHES 0 1 2 3 4 5 6 7 8
STA. 6
1/8" SHEET
1/32" SHEET
3/16" SQ. L.E.
STRUT POSITION (BOTTOM OF WING)
SPARS TAPER FROM 1/8"X1/4" AT RIB 1 TO 1/8"X3/32" AT RIB 11-MEDIUM HARD BALSA.
SPARS IN CENTER SECTION ARE 1/8"X1/4"
1/8"X1/4" SPAR SPLICES
AILERON OUTLINE
1/16"X3/4" TRAILING EDGE (TOP AND BOTTOM)
AILERON PUSH ROD POSITION
NOTE TAPERED SIDES ON C1
FRONT VIEW OF CYLINDER AT LEFT SHOWS METHOD OF ASSEMBLY-DISCS ARE CUT FROM BALSA IN THE FOLLOWING QUANTITIES:
36 PCS. OF "C" REQ. (1/16") 36 PCS. OF "D" REQ. (1/32") 12 PCS. OF "E" REQ. (1/16").
48 PCS. OF "F" REQ. (1/32") 36 PCS. OF "G" REQ. (1/16")-ALSO 12 OF 1/8" SHEET TO FORM TOP PARTS OF CYLINDERS (ROCKER ARM COVERS). C1 IS SIMILAR TO "C" BUT THICKER (1/8"). SIX REQUIRED OF C1.
SHADED AREAS INDICATE POSITION OF CABANE STRUTS (BOTTOM SURFACE OF WING).
SAND TO STREAMLINED CROSS SECTION
BRACE WIRES ARE OPTIONAL-CAN BE FINE WIRE OR THREAD
NEEDLE VALVE EXTENSION
COWL ASSEMBLY
16 REQ'D.
3/8" SHEET
1/8" SHEET
K & B "29" OUTLINE
MAIN EXHAUST STACK
EXHAUST STACKS
STRUT FAIRING FORMER "B"-6 REQUIRED OF 1/8" SHEET BALSA
1/32" SHEET COVERING
3/32" DIA. MUSIC WIRE
3/16" DIA. ALUMINUM TUBING
4-3/4" TRUE (FORWARD STRUT)
4-1/2" TRUE (REAR STRUT)
3/4" HARDWOOD DOWEL
7/16" DIA. WINDSHIELD WIPER HOSE
WHEEL PANTS AND COWL RING ARE OPTIONAL
STRUT POSITION (TOP OF WING)
SPARS TAPER FROM 1/8"X1/4" AT RIB 1 TO 1/8"X3/32" AT RIB 11-MEDIUM HARD BALSA.
1/8"X1/4" CENTER SECTION SPLICE PIECES
AILERON OUTLINE
1/16"X3/4" TRAILING EDGE (TOP AND BOTTOM).
BEVEL TRAILING EDGES AS SHOWN
ALL RIBS CUT FROM 1/16" SHEET-4 OF EACH SIZE REQUIRED, EXCEPT NO. 1 (11 REQUIRED).

Full-size plans are available to speed building time and insure a good model

Official AMA Modelplane Rules

Provisions for issuance: Under authority of the National Aeronautic Association, American representative of the Federation Aeronautique Internationale, world-wide governing body for all sporting aviation, the following model aircraft classifications and regulations are hereby prescribed by the Academy of Model Aeronautics.

Copyright 1953 by the Academy of Model Aeronautics, 1025 Connecticut Ave., N.W., Washington 6, D.C.

Radio Control Flight Regulations

These regulations were drawn up by the Radio-Controlled Model Aircraft Committee, Dr. Walter A. Good, Chairman, and shall continue in their recommended status until further announcement by the AMA Contest Board.

OBJECTIVE: To control by radio a model airplane so that various planned maneuvers may be accomplished. The criterion is the quality of performance, not the mechanism of control.

GENERAL REQUIREMENTS:

1. The one model permitted each contestant shall be of either the powered R.O.G. type, or of the towline glider type with no limit as to the length of towline used. No model shall weigh more than 15 pounds gross weight ready for take-off.

2. All radio equipment and operation must conform to the regulations of the FCC, and all contestants shall have active AMA licenses.

3. The contestant(s) shall assemble and cover the airframe.

CONTEST PROCEDURE:

1. All contestants shall set up in a group at the assigned site so that all transmitters and receivers will be under easy control of the chief judge.

2. Contestants desiring to fly will form a line (*with their ships*) starting at the dspatcher. Flight order will be determined by the flight line.

3. Contestants will fill out judging sheets, obtained from the dispatcher, before their flight turn comes up.

4. Upon being called to fly, the contestant will proceed to the flight area with his equipment.

5. Upon completion of his flight period, the contestant will clear the flight area as soon as possible and return to the end of the flight line if he desires to fly again.

6. *Number of Flights*—After reporting to the judges at the flight area, the contestant shall be allowed four minutes of free time to be airborne. If not airborne at the end of four minutes he shall return to the end of the line.

Official Flight—A flight is considered *official* if four maneuvers have been judged. A flyer may intentionally land his ship prior to completion of four maneuvers to prevent the flight from being official. Maneuvers may be repeated for improvement after completion of pattern and while still in the air (even during glide). No points (including landing) will be recorded after eight minutes of flight time.

The contestant is allowed the following number of flights which depend on the type of contest:

a. Local Meets—It is suggested that each contestant be allowed two official flights on the *Precision Pattern*. Each flight is limited to eight minutes. No scoring after the eight-minute limit. The highest single flight score shall determine the winner.

Note: The event director may increase the number of official flights above two, or even allow an unlimited number of flights if it is clearly announced before the commencement of any official flying.

b. Advanced Meets—It is suggested that each contestant be allowed an unlimited number of flights on both the *Precision Pattern* and the *Stunt Pattern*. Each flight is limited to eight minutes. No scoring after the eight-minute limit. The highest total of the contestant's best single Precision Pattern added to his best single Stunt Pattern shall determine the winner.

Note: The event director may limit the number of flights if it is clearly announced before the commencement of any official flying.

7. The contestant must call out the maneuver before he attempts to perform it. *This is the contestants' responsibility.*

8. With multiple sets of judges several frequencies may be flown at the same time.

9. Since several frequencies may be flown at the same time THERE WILL BE NO TESTING OF EITHER TRANSMITTERS OR RECEIVERS DURING THE FLYING PERIOD. Any interference will call for disqualification of the person causing the interference.

10. In the event there are no contestants desiring to fly officially, controlled test flying will be allowed. Such flights will be called in the rotation they are requested, and every effort shall be made on the part of the contestant to limit such testing periods to a maximum of five minutes.

POINT SYSTEM:

1. A point system shall be used to judge the performance of the pilot and aircraft. The points allotted below for each maneuver represent the maximum obtainable and shall be judged on the basis of *Excellent*—full points; *Average*—2/3 points; *Poor*—1/3 points; *Unrecognizable*—0 points.

2. Since the number of judges (3) will remain constant throughout the contest, the final score for each flight shall consist of the total number of points obtained for that flight. For small meets one or two judges may be used as long as the number of judges is unchanged for the duration of the meet.

PRECISION PATTERN. The following flight pattern shall be flown in the sequence indicated below:

	Maneuver	Maximum Points
1.	*Take-off*—unassisted ROG; no push	9
2.	*Straight flight* 500 feet to marker	6
3.	*Procedure turn* over marker 90 degrees to left. 270 degrees to right	6
4.	*Straight return flight from marker directly* over transmitter	6
5.	*S-turn* with axis perpendicular to wind; equal sized turns	6
6.	*Figure eight* with axis perpendicular to wind; smooth, equal sized circles, constant altitude	9
7.	*Rectangular pattern*—each leg at least 200 feet and parallel and perpendicular to wind	12
8.	*Spot landing* within 25 feet	24
	Measure to point where wheels first touch. Engine must be stopped before touchdown. 25 to 50 feet 18; 50 to 75 feet 12; 75 to 100 feet 6	
	STUNT PATTERN (need not be flown in sequence): Maximum Total.....78	

	Maneuver	Maximum Points
1.	*Prototype ROG* Taxi 50 feet, stop, take off.	24
2.	*Unassisted ROG* No push	9
3.	*Straight flight 500 feet*	6
4.	*Wingover* with precision 180 deg. recovery	9
5.	*Immelman*	9
6.	*Loops*—one, two or three Must do number called	6,12,18
7.	*Spiral dive*—three turns, and recover on same heading as entry.	9
8.	*Power dive*—at least 200 feet. Straight down best; rotation of less than 30 deg.; level recovery best.	12
9.	*Horizontal roll*—one, two or three Must do number called.	
10.	*Touch and go*—land and take off without stopping. Must approach from above 50 feet	21
11.	*Inverted* flight for 200 feet. Reduced points for less than 200 feet.	15
12.	*Outside loops*—one, two or three. Must do number called	12,24,36
13.	*Landing perfection*—smooth; no bounce. May be judged concurrent with spot landing	9
14.	*Spot landing*—100ft.; 75ft.; 50ft.; 25ft.; measure to point where wheels first touch. Engine must be stopped before model touches down	6,12,18,24
	Maximum Total.....207	

Towline Gliders

GENERAL. A towline glider is a non-powered outdoor model which is towed into the air from the ground by an inextensible line. There are minimum weight requirements for such gliders. No restrictions are placed on the design of outdoor towline gliders except that they shall meet the specifications of these Regulations. The following classes have been established: *Limited Glider, Nordic Glider.*

CLASSIFICATION. Towline gliders are divided into classes by projected area of the supporting surface(s) as follows:

Limited Glider—Where the projected area of the supporting surface(s) is not more than 350 sq. ins.

Nordic Glider—Where the projected area of the supporting surface(s) exceeds 496 but is not more than 527 square inches.

AREA OF SUPPORTING SURFACE(S). The projected area of supporting and/or stabilizing surfaces is the area seen when looking directly down on the surface. Supporting and stabilizing surface area enclosed in a fuselage shall be considered as supporting surface. The sum of lifting and stabilizing surface area is the figure to be taken into account for compliance with these regulations.

CROSS-SECTION REQUIREMENT. There is no minimum fuselage cross-section requirement for the limited class. For Nordic gliders the minimum area of the largest fuselage cross-section must be at least: $\frac{\text{supporting surface area.}}{100}$

In complex cases where the intersection between the surfaces and the fuselage is difficult to determine exactly, the maximum cross-section taken will be that lying between the two vertical parallel planes which are tangents to the largest circle which can be inscribed in the largest transverse section of the fuselage. There are no cross-sectional requirements for flying wing gliders.

TOWLINE-LAUNCHED. A glider is towline-launched when it is pulled into the air from the ground by means of a line which shall be inextensible except for a length of not more than 39" which may be of some elastic material. The length of the towline measured without extension shall be no longer than 328 feet. To assist in determining the time of release, a fabric or paper streamer shall be affixed to the towline not more than 12 inches from the end which is attached to the glider. Launching mechanism designed to assist the take-off may be used, provided it is dropped from the glider at the same time the towline is released. Launching aids or stabilizing devices used in launching, which are dropped at release, shall not be considered an integral part of the model for minimum weight or cross-sectional requirements.

MINIMUM WEIGHT REQUIREMENTS. Limited gliders shall weigh, complete and ready to fly, not less than 10 ounces avoirdupois. Nordic gliders shall weigh, complete and ready to fly, not less than 14.46 ounces avoirdupois.

BALLAST. If ballast is used to bring the glider up to the required weight, such ballast shall be permanently affixed to the glider. Any ballast to bring a Nordic glider up to the required weight must be placed in the interior of the model and be secured permanently. When movable ballast is necessary for C.G. adjustment on a Nordic glider, the model must be up to the required weight without the movable ballast.

NUMBER OF MODELS. Each contestant may enter two gliders in the Nordic class and the parts of the two models may be used in any combination desired provided the model still conforms to the rules. Each contestant may enter no more than one glider in the limited glider class.

OFFICIAL FLIGHT. An official flight is made when the glider remains in air for 40 seconds or more after the towline is released from the glider. Flights of less than 40 seconds may be declared official at the option of the contestant. The contestant's decision is to be made immediately and cannot be reversed later.

UNOFFICIAL FLIGHT. An unofficial flight occurs when the flight is of less than 40 seconds duration if the contestant's option described in the preceding paragraph is not exercised. When the model collides with another model after timing begins, the contestant shall have the option of declaring the flight to be unofficial. The contestant's decision is to be made immediately and cannot be reversed later. The time of unofficial flight is not recorded. Flights during which parts are dropped are automatically unofficial, as are flights during which the model is aided by the flyer or by artificial means.

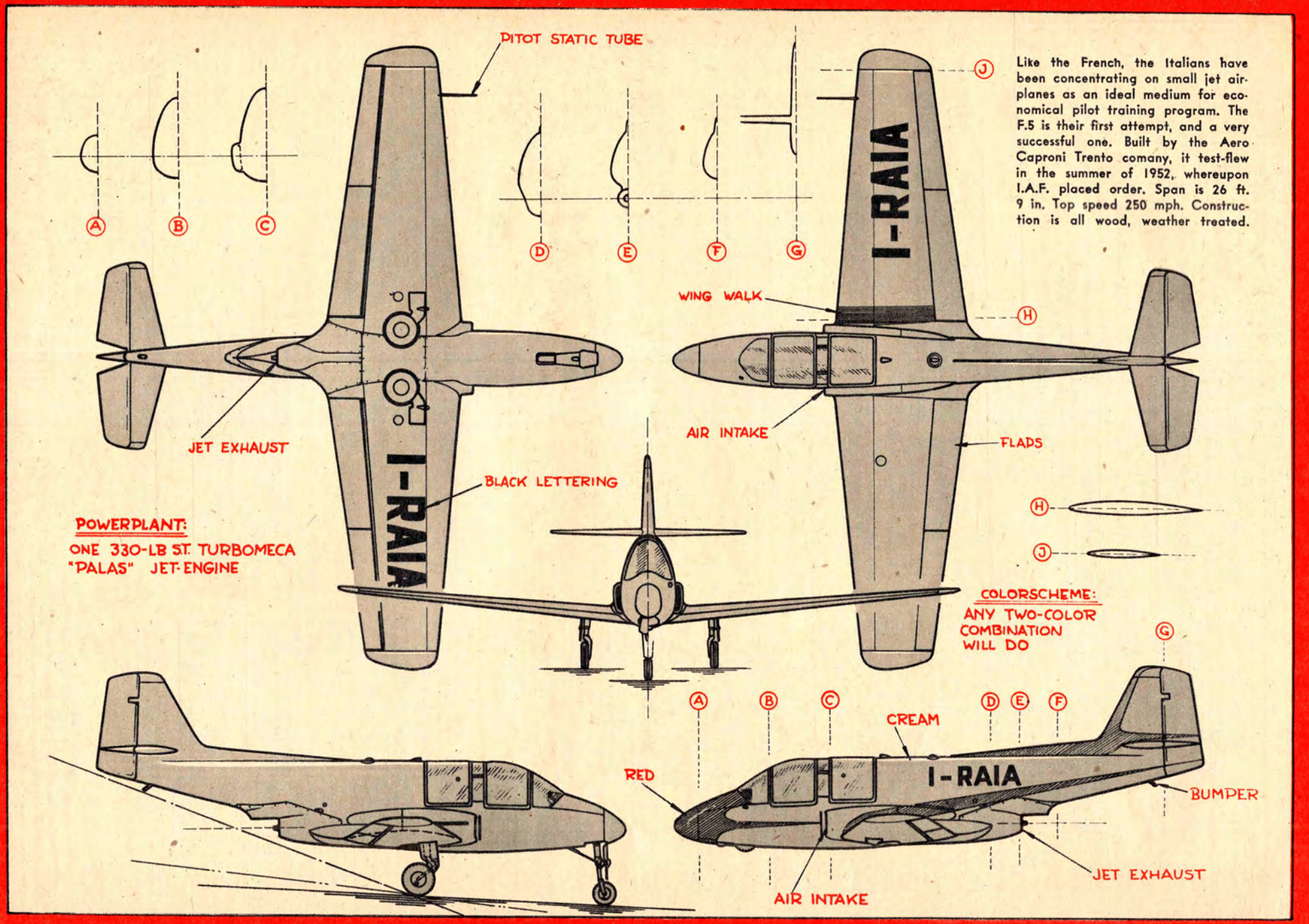
NUMBER OF FLIGHTS. Each contestant shall be allowed a total of six attempts to make three official flights. If the three official flights total 18 minutes for limited gliders or 15 minutes for Nordic gliders, one additional attempt shall be allowed to make a fourth official flight having no maximum flight duration limit imposed. Only one attempt is permitted for a fourth official flight. All official and unofficial flights as described above are attempts.

TIMING OF FLIGHTS. Flight time starts the instant the glider is released from the towline. Time ends when the glider touches the ground or water, meets an obstruction which prevents further flight, passes from sight of timer or when flight time exceeds 6 minutes for limited gliders or 5 minutes for Nordic gliders except for qualified fourth flights described above, which shall be timed for their full flight duration. The timer may move in any direction no more than 200 feet from a spot below the point of release in order to keep the glider in sight, so long as he remains on the ground.

OUT OF SIGHT FLIGHTS. Should the glider pass from the timer's sight, the stop watch shall be permitted to run for an additional 10 seconds. Should the glider reappear, timing is continued. Should it fail to reappear within the 10 seconds allotted, the watch shall be stopped, 10 seconds deducted from the time indicated, and the result recorded as the flight time.

SCORING OF FLIGHTS. Scoring time shall be the total elapsed time of three official flights plus that of qualified fourth flight. Flight duration shall be scored to the nearest one-fifth second. Individual flights of more than 6 minutes for limited gliders or 5 minutes for Nordic gliders shall be recorded as 6 minutes or 5 minutes, respectively, except for qualified fourth flights described above which shall be recorded for their full flight duration.

IDENTIFICATION OF GLIDER. Each glider shall have a registration certificate bearing the name and address of the builder and pertinent information concerning its size characteristics permanently affixed. Each glider shall have the sporting license number assigned by the Academy of Model Aeronautics permanently affixed to the upper side of right-hand lifting surface. License numbers are to be at least 1 inch high.



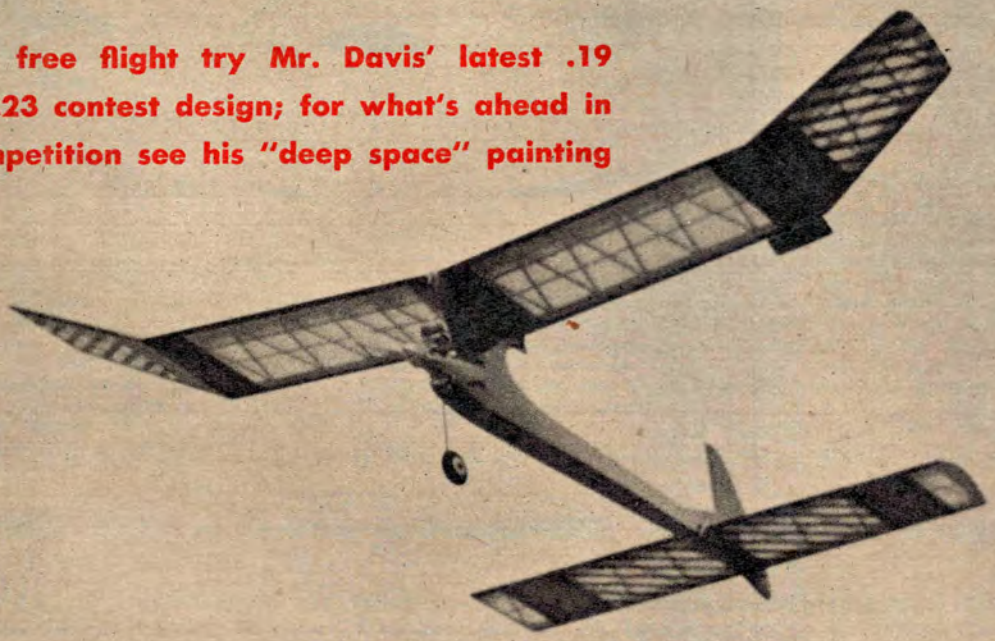
Like the French, the Italians have been concentrating on small jet airplanes as an ideal medium for economical pilot training program. The F.5 is their first attempt, and a very successful one. Built by the Aero Caproni Trento comany, it test-flew in the summer of 1952, whereupon I.A.F. placed order. Span is 26 ft. 9 in. Top speed 250 mph. Construction is all wood, weather treated.

ITALIAN JET TRAINER/SPORTS PLANE **CAPRONI F.5** SCALE 3/16" = 1' DRAWN BY BJÖRN KARLSTRÖM

Denny Davis: Artist and Modeler

Introducing the "Ultra Hogan" and the "Universals"

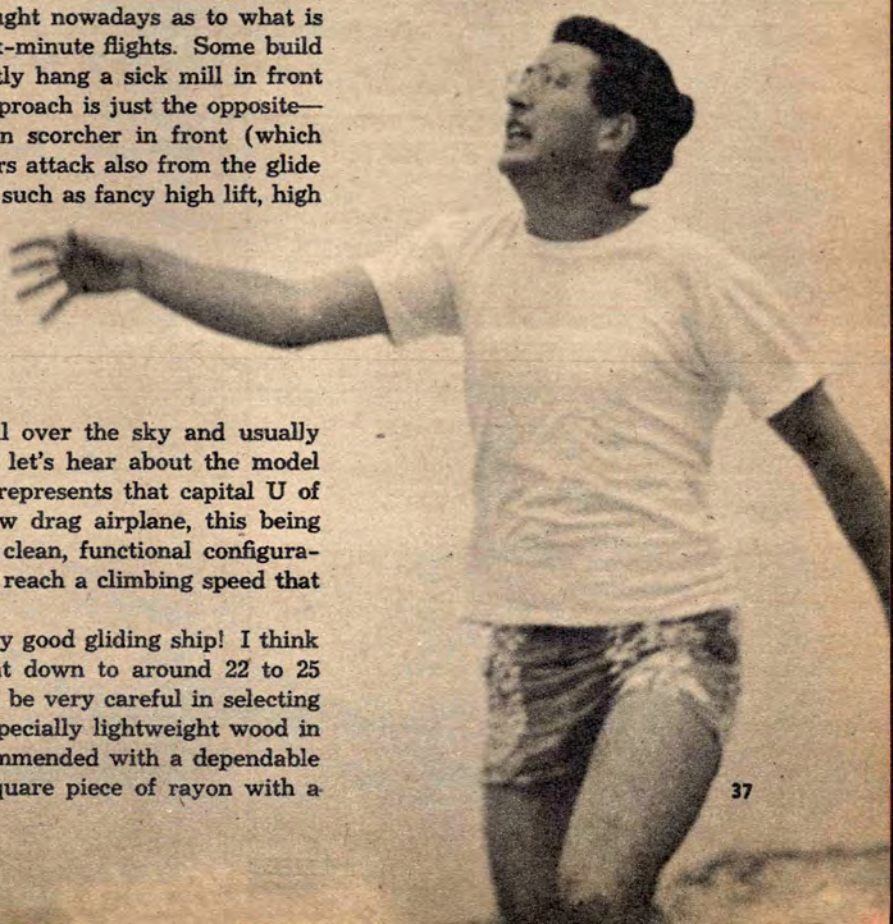
For free flight try Mr. Davis' latest .19 or .23 contest design; for what's ahead in competition see his "deep space" painting



■ There seem to be two or three schools of thought nowadays as to what is the best way to go about getting at least three six-minute flights. Some build very lightly constructed barn doors and reluctantly hang a sick mill in front and hope to glide their way to glory. Another approach is just the opposite—they hang all their hopes on that very hot bean scorcher in front (which probably did 125 mph in a speed job!). Still others attack also from the glide angle but try to attain it by some archaic method such as fancy high lift, high drag, high-looping wing airfoils.

Well, as you might have suspected I believe in altitude! Engine power is a way to get altitude, but that power must be utilized. It should be converted to a smooth clean climb pattern which naturally draws the most out of the model and the engine. These extreme all-power jobs spend much of their zip going all over the sky and usually not up. *Up* is the word we are interested in, so let's hear about the model that does it with a capital U. The Ultra Hogan represents that capital U of "Up," and also of "Ultimate." The Ultra is a low drag airplane, this being achieved through the use of low cross section, a clean, functional configuration and a wing airfoil which allows the model to reach a climbing speed that makes these low drag factors pay off.

Believe it or not, with all this the Ultra is a very good gliding ship! I think the low drag paid off here too. Keep the weight down to around 22 to 25 ounces. You can do this and still not skimp! Just be very careful in selecting the lightest, strongest wood for its weight. Use especially lightweight wood in the stabilizer. A parachute dethermalizer is recommended with a dependable air timer for release. A simple four-cornered, square piece of rayon with a



DAVIS: the artist

■ *We enjoy the Nationals, we enjoy the Internationals—and soon the Universals? It would be a matter of time and space—time, space and mind.*

What planet, what moon, what satellite might provide the best site for this Universal Air Model meet? Venus, Mars, the Moon, Earth? Venus—that has heavy atmosphere, terrific clouds—but will an engine run on ammonia instead of oxygen? Mars—lots of nice flying fields but very uncomfortable and a bit distant. The Moon? Too cold and no thermals. Earth? Beautiful, very convenient but it seems there is an Iron Curtain. Flying sites are either convenient or large, but never both!

Nevertheless, the problem now is to prepare. Don't forget extra glue, wood, fuel, rubber, props and oh, yes—transportation!

Have you ever wondered about such things? Well, in this picture I have endeavored to show you what I think a model meet of the future would be like. It's not a prophecy, but simply an idea, or several ideas, using the medium of art as a means of communication. This idea utilizes the device of "deep space" which might, in an abstract way, be compared to the device used in model airplane design called "long moment arm." Or if the picture did not use "deep space" and was strictly a more-flat, two-dimensional thing, it might be a "short moment job"!

The problems of designing a model airplane with relationships of area, weight and structure, etc., are in general the same as composing a picture with relationships of color, form and line to cope with.

This picture is an idea for and by the eye and mind—an approach, using as I have said the medium of art. For an approach to the problem of model airplane design I offer the "Ultra Hogan."

—DENNY DAVIS
(Ontario, California, 1953)

hem sewed around the edges does the job of bringing it down. Sixteen inches square is the right size, with about a six foot lead secured to the rear of the ship. If the chute seems to have too much effect and tends to dump the model out, lengthen the lead. Go the other way if it doesn't bring it down fast enough.

Before we get started I think I should tell you about a couple of other outstanding virtues of this ship. Consistency is one and ruggedness the other. The Ultra represents just about maximum in these departments! I have been flying mine for over a year and a half and it has never crunched once. (Affidavit: the accompanying picture was taken just before this article was sent in.)

Ready at the work bench?

Fuselage. Author's foreword: I think the most accurate kind of construction is to separate a wing, stabilizer, engine into a grouping in which important factors such as wing incidence, moment arms, etc., can be easily checked and proper trimming installed during the initial construction rather than later as an afterthought.

Step One. Select one straight medium-light piece of 3/8"x 3/16" for "backbone" and 3/16"x5/8" for pylon T.E. and center piece. Assemble these "flat" on plans and let dry.

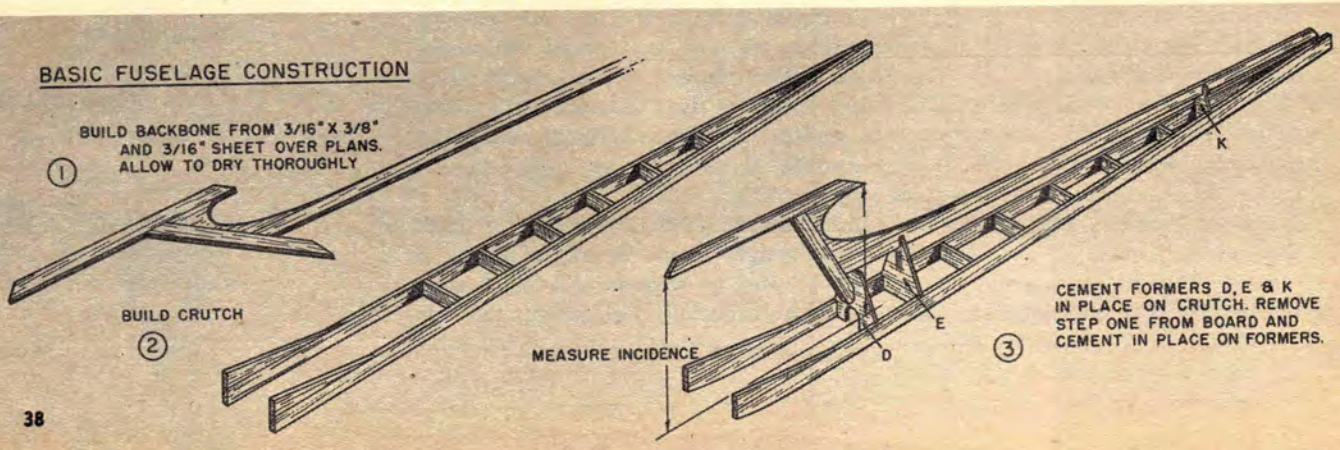
Step Two. Select two pieces of 3/16"x3/8" for longerons (straight, not too soft!). Pin to crutch plans, noting splicing at front.

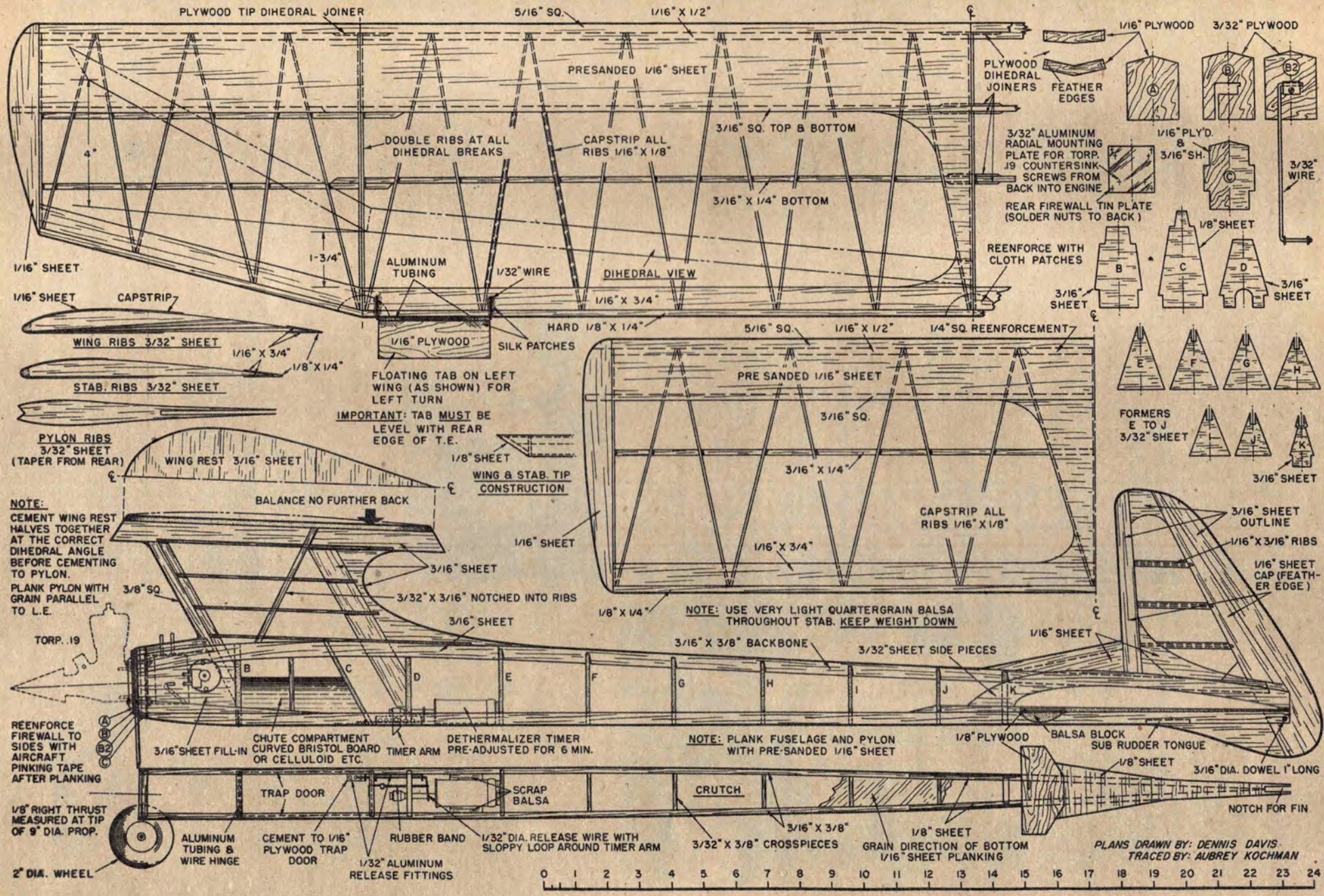
Step Three. Cut out formers (C), B, C, D, E, and K and cement in place on crutch assembly. Add crosspieces of 3/32"x3/8" L.T.

Step Four. Remove "step one" assembly from plans and cement in place on formers D, E, and K. Add all formers from E back to K. Check carefully for straight alignment and correct incidence angle by measuring front and back of center piece of pylon, duplicating that on plans. Set dry.

Install pylon L.E. (3/8" sq.) from platform keel to former B, cut "side pieces" (front) from 3/16" sheet. Cement in place in notches on formers (C), B, C, over D to E add pylon ribs, two exterior spars (diagonally as shown). Locate and drill holes for engine mounting plate on "firewall sandwich assembly." Solder nuts to thin tin plate and cement in place on already located former (C). Check for right thrust by measuring out 4½" from center (prop radius); and right thrust should measure 1/8" (from top) at this point.

Locate tank vents and outlets in position suggested on plans. Cement tank in place using blocks and wedges to sides, etc. Fill in forward part (*Continued on page* 62)


BASIC FUSELAGE CONSTRUCTION
BUILD BACKBONE FROM 3/16" X 3/8" AND 3/16" SHEET OVER PLANS. ALLOW TO DRY THOROUGHLY
1
BUILD CRUTCH
2
MEASURE INCIDENCE
K
E
D
3
CEMENT FORMERS D, E & K IN PLACE ON CRUTCH. REMOVE STEP ONE FROM BOARD AND CEMENT IN PLACE ON FORMERS.


PLYWOOD TIP DIHEDRAL JOINER
5/16" SQ.
1/16" X 1/2"
PRESANDED 1/16" SHEET
DOUBLE RIBS AT ALL DIHEDRAL BREAKS
CAPSTRIP ALL RIBS 1/16" X 1/8"
3/16" SQ. TOP & BOTTOM
3/16" X 1/4" BOTTOM
4"
1-3/4"
1/16" SHEET
ALUMINUM TUBING
1/32" WIRE
DIHEDRAL VIEW
1/16" X 3/4"
HARD 1/8" X 1/4"
1/16" PLYWOOD
SILK PATCHES
1/16" PLYWOOD
3/32" PLYWOOD
PLYWOOD DIHEDRAL JOINERS
FEATHER EDGES
3/32" ALUMINUM RADIAL MOUNTING PLATE FOR TORP. .19 COUNTERSINK SCREWS FROM BACK INTO ENGINE
REAR FIREWALL TIN PLATE (SOLDER NUTS TO BACK)
1/16" PLY'D. & 3/16" SH.
3/32" WIRE
1/8" SHEET
REENFORCE WITH CLOTH PATCHES
3/16" SHEET
3/16" SHEET
1/16" SHEET
CAPSTRIP
WING RIBS 3/32" SHEET
1/16" X 3/4"
1/8" X 1/4"
STAB. RIBS 3/32" SHEET
PYLON RIBS 3/32" SHEET (TAPER FROM REAR)
FLOATING TAB ON LEFT WING (AS SHOWN) FOR LEFT TURN
IMPORTANT: TAB MUST BE LEVEL WITH REAR EDGE OF T.E.
1/8" SHEET
WING & STAB. TIP CONSTRUCTION
5/16" SQ.
1/16" X 1/2"
1/4" SQ. REENFORCEMENT
PRE SANDED 1/16" SHEET
3/16" SQ.
3/16" X 1/4"
CAPSTRIP ALL RIBS 1/16" X 1/8"
1/16" X 3/4"
1/16" SHEET
1/8" X 1/4"
NOTE: USE VERY LIGHT QUARTERGRAIN BALSA THROUGHOUT STAB. KEEP WEIGHT DOWN
FORMERS E TO J 3/32" SHEET
3/16" SHEET
WING REST 3/16" SHEET
BALANCE NO FURTHER BACK
NOTE: CEMENT WING REST HALVES TOGETHER AT THE CORRECT DIHEDRAL ANGLE BEFORE CEMENTING TO PYLON.
PLANK PYLON WITH GRAIN PARALLEL TO L.E.
3/8" SQ.
3/16" SHEET
3/32" X 3/16" NOTCHED INTO RIBS
3/16" SHEET
TORP. .19
3/16" X 3/8" BACKBONE
3/32" SHEET SIDE PIECES
1/16" SHEET
3/16" SHEET OUTLINE
1/16" X 3/16" RIBS
1/16" SHEET CAP (FEATHER EDGE)
REENFORCE FIREWALL TO SIDES WITH AIRCRAFT PINKING TAPE AFTER PLANKING
3/16" SHEET FILL-IN
CHUTE COMPARTMENT CURVED BRISTOL BOARD OR CELLULOID ETC.
TIMER ARM
DETHERMALIZER TIMER PRE-ADJUSTED FOR 6 MIN.
NOTE: PLANK FUSELAGE AND PYLON WITH PRE-SANDED 1/16" SHEET
1/8" PLYWOOD
BALSA BLOCK SUB RUDDER TONGUE
1/8" SHEET
3/16" DIA. DOWEL 1" LONG
NOTCH FOR FIN
TRAP DOOR
SCRAP BALSA
CRUTCH
1/8" RIGHT THRUST MEASURED AT TIP OF 9" DIA. PROP.
ALUMINUM TUBING & WIRE HINGE
CEMENT TO 1/16" PLYWOOD TRAP DOOR
RUBBER BAND
1/32" DIA. RELEASE WIRE WITH SLOPPY LOOP AROUND TIMER ARM
1/32" ALUMINUM RELEASE FITTINGS
3/32" X 3/8" CROSSPIECES
3/16" X 3/8"
1/8" SHEET
GRAIN DIRECTION OF BOTTOM 1/16" SHEET PLANKING
2" DIA. WHEEL
PLANS DRAWN BY: DENNIS DAVIS
TRACED BY: AUBREY KOCHMAN
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Western Roundup

Loss of free flight area blow to L.A. modelers . . .

■ The Sepulveda Basin is now a thing of the past for the free flight flyers. "Why?" is the question that a lot of fellows are asking. Rumor is that somebody tramped across city land leased for agriculture purposes.

"They" claimed the guy was a model builder, but it could have been one of the guys who swipe our models. This has happened lots of times.

The logic of this move has yet to be reasoned. We don't find them closing

Seven-year-old Ray Hurd of Atlanta, Ga., started modeling at the age of 4, has 10 trophies! By now a seasoned flyer, he has a great future.

freeways when a guy runs amuck after a wild 90 mph run from the cops on Arroyo Secco. They don't stop you from driving cars if one blows a tire and crashes—no, but if some person who is nameless and titleless tramps across some recreation land which is leased for profit to some individual, take the recreation land away from the people, don't let those kids fly airplanes, force them to put in their time on street corners or in hot rods, or think up ways of killing time.

The model builders, though, are not taking this ultimatum lying down. They are tackling the problem in a sensible manner; committees have been formed, all the civic organizations which have conducted contests have been contacted. The modelers don't want to hurt anyone or destroy anything—they simply want a chance to fly their models built at home, to have a few hours in fresh air out of the smog. . . . We got a big chuckle out of a question in a paper appearing the weekend following the edict: "What is the hobby the largest number of people participate in?" The answer—model building. This in a very large Los Angeles paper.

Radio control and U-control will continue, however; R/C as always and U-control if and when a flying area gets developed.

Various free-flight committees have been in forced action, layouts for the field have been presented, rules for flying have been formulated, even though the area set aside is a little small, 1200 by 2400 feet. The hobby industry (West Coast) is helping—it was quite surprising to find over 100 interested modelers attended the special meeting. Ken Aymer and Ken Willard along with Wayne Schindler have been most active, several letters have been sent to the Parks Commission and some received. In one answer there was a suggestion that perhaps some outlying pasture lands could be obtained for this purpose, a suggestion which several fellows immediately jumped on, but which remains to be seen. All in all the problem is serious, one which is being faced squarely and we have no doubt a sensible solution will be worked out to the benefit of everyone concerned.

Top news as far as the contest-minded modeler is concerned was that Joe "National Champ" Foster won the Wakefield. We have been firmly convinced for a

Frank Brophy (lt.) representing Nils Testor with Burt Nelson, winner of the Testor Award for best finished airplane. Burt's from Sea Girt.

long time that Joe was a model builders' modeler, a strong, competitive flyer, and this was surely demonstrated in the 4th round fly-off in England. For our money Joe is the only true National Champion we have ever had, winning the hard way by flying in all classes with all types of models against a field which broke no less than 27 national records. Joe not only topped the perfect 5 four times in a row, but rumor has it that his ship could have put up 5 minute flights for 24 hours had it been necessary.

Out West we are equally proud of Stan Hill for some excellent flying—his gas job was the hottest thing on the field; lacking a few tough breaks he could have done the five easily. The FAI individual and team championship victories have already erased the memories of past tries, even though Stan and Joe had to take California weather all the way to England to win for the good old U. S. A.

Chicago's most noted free flight designer, Carl Goldberg with his Cumulus model. C.G. placed very high in the National meet F/F events.

Realistic Fairchild 24 with "inline-engine" cowled Fox .59 by Tom McCann, Montgomery, Ala. Front interchanges with radial cowled Fox .35.

Speculation as to next year's site was quite thick. The contest where all the discussion took place was at Vessells Ranch, and our peace and quiet were continually interrupted by jets taking off. After the question was thrown around for about five seconds, eyes started swinging to the south—toward those jets. Yep, that's it, Los Alamitos. Where else are there better facilities, where else better weather than California—you just name it, brother, you name it. We realize that transportation to the West Coast will be a problem, but a small one, and already guys are working on such details. Yes, we want that contest next year.

Speculation immediately was started as to whether the fellows who won the preceding year would automatically become team members next year. We think they should—it has been so in the past barring a big argument one year, and when one takes into consideration the achievement by Dave and Joe, also that these two lads are among our top flyers at all contests, it leaves nothing to be desired. Our vote says yes—we have only three team members for each event left to pick. . . . And how about the U-control and Nordic? Do they all get together next year for that dream model olympics?

Surprise visitor at the San Valeers ROW meet was Roberto Guzman from Mexico City. Seems like CMA had a DC-6B scheduled for delivery, so he showed up at the contest with Jose Tellez and timed. After the meet they went to watch the R/C gliders soar. Bob (Model H) Holland won the contest for the second straight year with the same model he won ROW with at the '48 Nats. He lost the ship in the mountains again, but we can probably expect it returned to action—for the A.M.A. sticker aboard brought it back on three other "lost" occasions. Bob Wieble and several of the other Sans had out Paul Gilliam's new Civvy Boy which is now back (*Continued on page 58*)

Fourth in flying scale at the Southeasterns was this B-17 model built and flown by Howard Payme of Kernersville, N.C. Much admired.

. . . . Dixie contingent turns out en masse for Nats

■ Forty Southern flyers wearing Philco T-shirts and work aprons won over 50 places in the 1953 Nationals at Willow Grove Naval Air Station up in the wilds of Pennsylvania. Fourteen national titles were brought back to the South and at least two records set that we know of. Modelers from Mississippi, Tennessee, Alabama, Georgia, South Carolina, North Carolina and Florida demonstrated that in the field of modeling there is such a thing as the "Solid South."

Walter Pyron, age 14, of Decatur, Ga., set records in junior A and B speeds. He had Half-A sewed up with a 11.8 record time, only to find that the three timers struck when the five o'clock whistle blew and left him in full flight without completing his time! Pyron also won the junior stunt title with the Elliott-Berkeley P-40 Warhawk.

Gable Ray of Smyrna, Ga., also took three national titles. As a senior he won Half-A free flight, Nordic glider, and

Lt. Cmdr. Ed. Goshorn, liaison officer at Southeastern meet and R. H. Elliott, conductor of the "Southern Scene" admire Lloyd Wason's AJ-1.

towline glider. George Perryman won first in open towline unlimited. Marvin Burley of Spartanburg, S.C., won in B free flight open, and Hill Hutchins of the same city came close in senior precision acrobatics. Hill did win first in senior control line scale.

As was to be expected, Herbert and Alfred Davis from Birmingham were among the top performers. Herbert won B speed senior and Alfred got D speed junior. Tommy Baker, another "Rebel," took open A speed. Dick Culver, of Oak Ridge, Tenn., didn't miss junior high point by very much. He took all kinds of places including firsts in indoor hand launched and outdoor towline.

Number One son (Bob Elliott) of Atlanta added the National stunt title to his long list. 'Twas a "Bobby Jones grand slam"—the Greater Southeasterns, the Tangerine Internationals, and the Nationals for him this season.

Just to prove that the fourteen first places were not exceptions, the Southern team won 10 seconds and 10 thirds. Into this charmed circle also came Melvin Cook, Larry Parkinson of Decatur, Ga.; Harris Grimes of Atlanta; Ed Shaw of

Frank Bushey, ex-AMA pres., Lew Mahieu (the Kiwi Kid), Jim Bowers and George Gardiner with Bulova PAA-Load watch awards at Nats.

Pensacola, Fla.; Bucky Brownlee of Stone Mountain, Ga.; D. C. May of Chamblee, Ga.; Bob Surrency of Memphis, Tenn.; and speed-man Bill Thomas of Daytona, Fla. There were many others to win fourth to 10th places.

Several officers of the newly formed and incorporated Southeastern Federation of Model Airplane Organizations and Sponsors, Inc., were present with all eyes open.

The writer tendered his resignation as Vice President District 5. The AMA executive Committee passed resolutions commending me on the progress we'd made and asked me to reconsider. No soap! If a V-P don't get the backing of the Washington office, he's just a stooge and I don't fancy the role. To succeed me, a petition signed by scores of modelers in four states nominated George Perryman. He's the fellow to vote for! There'll be plenty of campaigning for George when election time comes around.

Lloyd Wason, newly elected president of the Georgia Congress of Model Airplane Clubs, had a fine looking display booth at the Southeastern Fair. Hobby shops cooperated, and it attracted big crowds every day and evening. Decatur and Buckhead flyers put on two combat contests on the two school days and the two Atlanta national stunt champs, Pyron and Elliott, gave exhibitions. Fair Director Mike Benton made this possible. He's a friend of the modelers in many ways.

June 18-19-20 are the dates for the 1954 Greater Southeasterns at Naval Air Station in Atlanta. One full day devoted to Jim Walker's events for sub freshmen and freshmen. This first "Jim Walker Day" is expected to draw a thousand youngsters! Then follow the regular events plus these new ones: Navy Carrier Landing, Payload, and maybe Team Racing. We're

Leon Shulman demonstrating catapult-launch method of flying built-up jet scale models such as Monogram's. His F-86 loops at "sonic" speed.

giving all "youse guys" plenty of notice now—start building those ships for next June. You'll see an even finer Greater Southeasterns. Commander Eddy, at the Nationals, assured me that he was going to back our Atlanta Commander Goshorn to the limit. The dirigible, the "Small Fry" ship, the "Blue Angles," the helicopters, plenty of work tables in our big hangar and whatever they have to send our way. And by that time Jim Walker is apt to have a dozen more new exhibitions, so make your plans to attend.

You sure gotta hand it to the Navy at Willow Grove! Every officer we saw, every sailor on duty gave his best attention to the modelers and to making this a near-perfect contest. We didn't see a single big-size ship take off or land during the entire week. No interruptions of any kind. The station belonged entirely to the contest and nothing interfered.

Donald M. "Rusty" Crooks, Dallas motorcycle policeman, put 435 hours into United Air Lines Boeing Stratocruiser. Four O&R .29's; 50 mph. Span 7 ft.; fuselage 5½ ft. Weighs 10 lbs.

Matty Sullivan, the CD, was a genial Irishman and he stayed busy! Leon Shulman, to my way of thinking, is the strongest leader in model aviation today!

The hardest working guy at Willow Grove was Lew Mahieu of K&B. Send him to the Southeasterns! We fellows down here need his experience and help very much. (Did you read this, Mr. Brodbeck?)

What's cooking by now in Orlando? Lot of flyers asked us at the Nationals about your meet, the Tangerine Internationals. You Exchangeites in Orlando have an obligation to continue this meet. Give it the same attention you would your own business or family and it will be a great suc- (Continued on page 60)

TESTORS BUTYR

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Testors Clear Butyrate Dope produces a tough well sealed surface. Testors Colored Butyrate Dopes produce a solid beautiful surface with one coat.

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COSTS A LITTLE MORE . . .
WORTH A LOT MORE!

Scale Fighter

Enterprise's latest is copy of World War II Mustang

■ The newest reincarnation of the famous wartime Mustang is a very realistic copy by Enterprise Model Aircraft & Supply Co., Inc. (Mineola, N. Y.). The kit, which sells for $1.95, enables you to produce a 17½" span plane, with overall length of 15½". It is suited for engines from .039 to .074 cu. in., and the wing area is 52 sq. in. Another of Jerry Brofman's designs, this model follows the lines of the famed Mustang very closely, so much so that some builders might prefer to keep it as an exhibition job, rather than flyer.

All die-cut balsa parts in the kit are outlined in ink, to make work easier for the novice; the parts are also identified by name or by code marking to correspond with the plans.

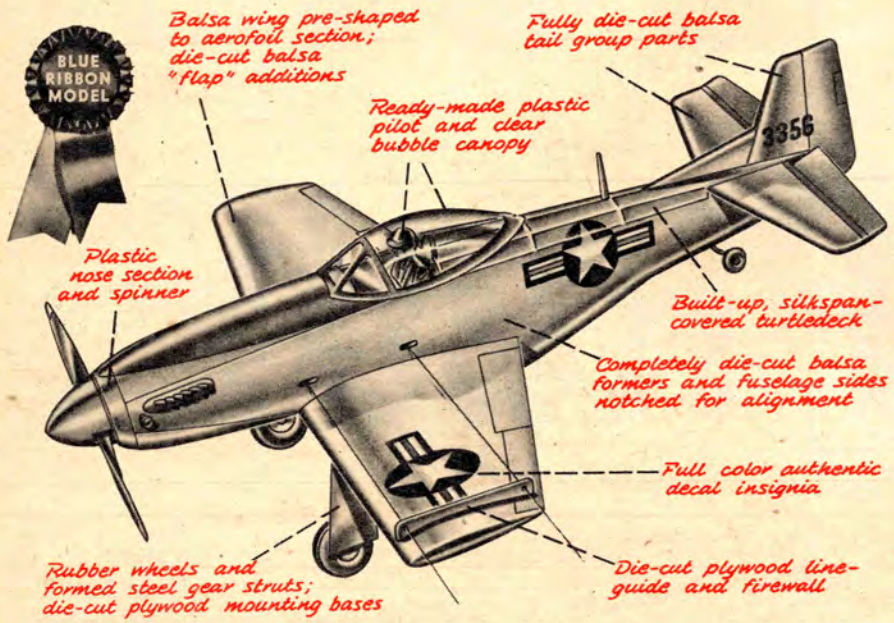
Fuselage sides are full length and include the radiator tunnel, most distinguishing feature of the Mustang. They are notched to accept the tongued formers, of which there are seven; the ply firewall is notched to hold hardwood motor bearers, but radial-mounted engines may be fitted in too. A rounded block of balsa forms the entire cowling forward of the cockpit; to the rear, three balsa stringers are cemented, and later covered with paper. The entire underside of the fuselage is sheet balsa.

Realism and accuracy are enhanced by the plastic parts in the kit. There is a ridged canopy, a prop spinner with backplate and a fuselage nose piece. There is also a moulded pilot and a sheet of three-color decals.

The wing comes as a single piece, cut to planform and to airfoil shape. It is scored at the center for accurate dihedral cutting. Trailing edge flaps of 1/16" sheet complete the outline. Tail surfaces are sheet, with the two elevator halves joined by a hardwood spar.

The landing gear wires are bent to shape and three rubber wheels are a part of the kit, with metal eyelets to assure easy turning.

The plan sheet is exceptionally complete, consisting mainly of assembly views, in eight steps; there are also added assembly details and a quarter-scale three-view of the finished model.


BLUE RIBBON MODEL
Balsa wing pre-shaped to aerofoil section; die-cut balsa "flap" additions
Fully die-cut balsa tail group parts
Ready-made plastic pilot and clear bubble canopy
3356
Plastic nose section and spinner
Built-up, silkspan-covered turtledeck
Completely die-cut balsa formers and fuselage sides notched for alignment
Full color authentic decal insignia
Rubber wheels and formed steel gear struts; die-cut plywood mounting bases
Die-cut plywood line-guide and firewall

Team Racer for A/2

Scale-like Dil-Bod takes .049-.051 engines

■ A trim little Half-A team racer, intended for engines of .049-.051 size, Dil-Bod is a product of Southwestern Model Mfrs. (West Tulsa, Oklahoma). It was designed by George Millikin, and features a midwing design, inverted engine and fully faired wheels. The model has a 14" wingspan, and the kit retails for $2.50.

The fuselage is a built-up balsa shell, with the main side sections of 1/16" sheet. These pieces run the full length of the fuselage, as far forward as the firewall. There are three die-cut formers to the rear of the cockpit opening, all of them keyed to fit in slots in the side pieces. The firewall is mahogany three-ply, and holds the formed landing gear wire.

Cowling back of the cockpit is in one piece on each side, and sweeps upward at the rear to incorporate the full fin shape. There is an additional fin piece, with the grain running vertically; thus the completed fin is actually three-ply balsa, which may be sanded to a streamlined shape, and should never break off, even with rough handling.

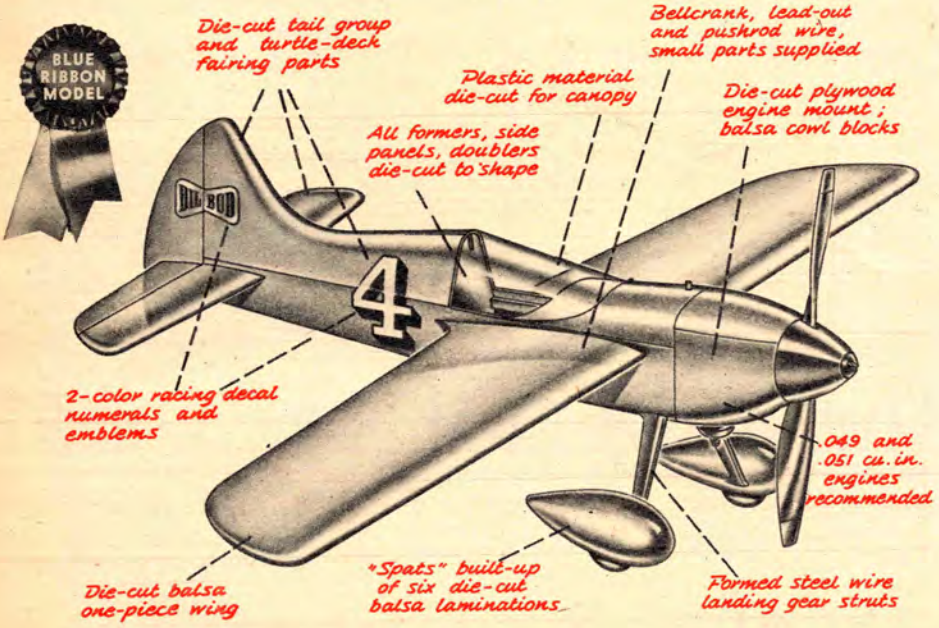
The stabilizer and elevators are 1/16" sheet, and only one side of the latter is made movable; cloth is furnished for hinging.

The single strut landing gear terminates in wheel pants, which are built up from die-cut ⅛" balsa sections, six for each pant. The use of 1" diameter Veco wheels is recommended. A skid is used at the tail.

The wing comes in the form of a single 3/16" thick die-cut sheet, which must be sanded to cross section.

The kit includes die-cut windshield plastic material, decals in several colors for pepping up the completed model. It is suggested that the entire plane be given a coat of sanding sealer, sanded lightly, then covered all over with paper. The final doping may then be applied. This procedure results in a really tough, but light structure.

The plans include a reduced size three-view of the finished model, and exploded views of assembly. They specify makes and sizes of all required accessories, such as tank, spinner, props.


BLUE RIBBON MODEL
Die-cut tail group and turtle-deck fairing parts
Bellcrank, lead-out and pushrod wire, small parts supplied
Plastic material die-cut for canopy
Die-cut plywood engine mount; balsa cowl blocks
All formers, side panels, doublers die-cut to shape
DIL BOD
4
2-color racing decal numerals and emblems
.049 and .051 cu.in. engines recommended
Die-cut balsa one-piece wing
"Spats" built-up of six die-cut balsa laminations
Formed steel wire landing gear struts

Water Wonder

Jasco's Half-A boat is fast affair for small motors

■ It may come as a surprise to old-time modelers to learn that Junior Aeronautical Supply Co. (New York 3, N. Y.) has entered the model boat field, but it's a fact. The first Jasco offering in this category is a little speedboat for Half-A engines, pushed along by an air propeller. Called the "Aqua-Skimmer," its hull looks something like an outboard racing job, but with the engine mounted on a pylon at the extreme rear. The boat is 15½" long and has a 7¾" beam, and is intended for any of the engines of .049 or less; there is a special firewall for Spacebug engines, and another for such power plants as the K & B Torp, which is shown.

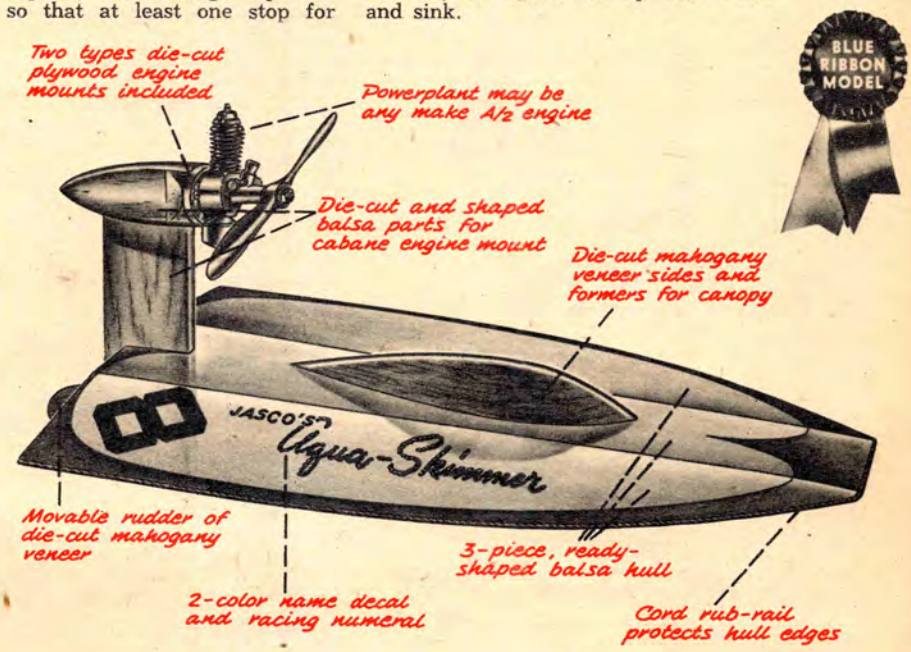
The hull is made up of three shaped pieces of ⅞" thick balsa, which you cement side by side. All three are tapered upward at the bow, and the outer two also have an edge taper. Just a little work with sandpaper will therefore finish the hull.

The center piece has a slot cut at the stern for insertion of the engine pylon; a slot at the lower end of this part takes the mahogany rudder, while a streamlined nacelle shape is built up at the top from die-cut 3/16" thick balsa. The two firewalls are of three-ply hardwood, and are marked for motor mounting holes.

As an adjunct to realism, a streamlined "cabin" is built in the center of the hull, from die-cut pieces of mahogany veneer.

The plans consist of assembly drawings, and a drawing of a completed Skimmer, to show one idea for decoration. Colorful decals furnish name and racing-type number. The instructions suggest racing several of these boats across a pond, with enough laps required so that at least one stop for refueling will be needed. This sounds like a lot of fun—sort of a "free flight" team race on the water!

Really complete waterproofing will be needed, of course, but there will be no trouble with split seams, since the hull is solid, nor can it fill up with water and sink.


Two types die-cut plywood engine mounts included
Powerplant may be any make A/2 engine
Die-cut and shaped balsa parts for cabane engine mount
Die-cut mahogany veneer sides and formers for canopy
JASCO'S
Aqua-Skimmer
Movable rudder of die-cut mahogany veneer
3-piece, ready-shaped balsa hull
2-color name decal and racing numeral
Cord rub-rail protects hull edges

Channel Flyer

deBolt's little radio control ship is a real cutie

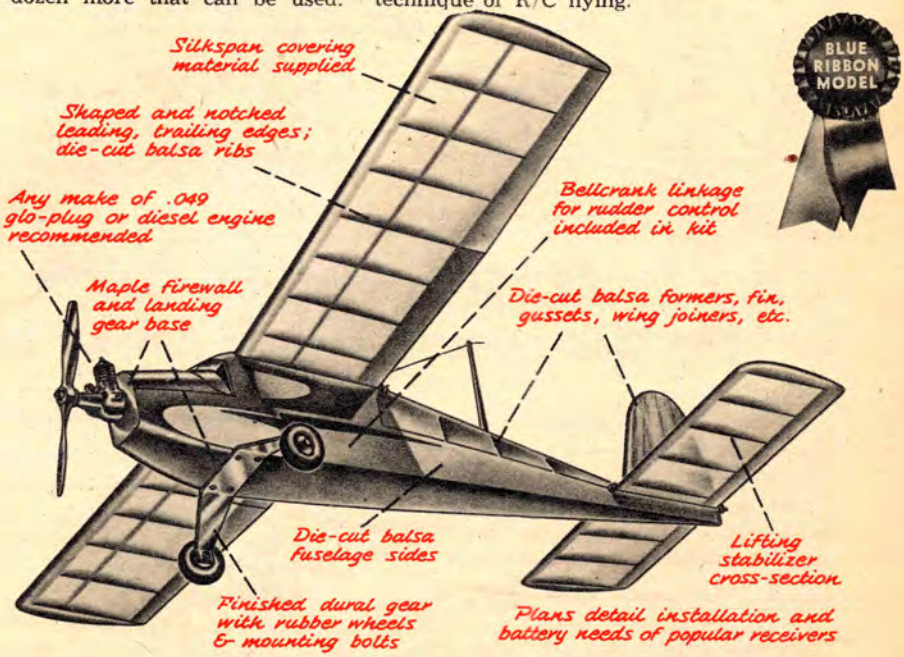
■ Smallest kit plan designed strictly for R/C purposes now on the market, the Kitten is the third in the line of radio models offered by deBolt Model Eng. Co. (Williamsville, N. Y.). It was designed by Harold deBolt especially for small area R/C flying, and will put on a fine show within the confines of a football field, if need be. The kit sells for $3.95. Though the plane has a small span, as R/C ships go (34"), the area is a respectable 220 sq. in., and the total flying weight can be 18 oz. Thus, wing loading is only about 12 oz. per sq. foot, lots less than that of many successful R/C ships now in use. Radio equipment weight should be held to 12 oz. or less; this is quite possible with many sets now on the market. There is a space about 6½" long x 3¾" high and 2½" wide in the cabin for the radio apparatus and batteries.

The fuselage is built on a ⅛" thick balsa bottom plate; the bulkheads are cemented to this, then the die-cut sides are added. The landing gear is of the dural sheet type utilized on the larger Dmeco R/C kits; it is fastened to a maple plate with wood screws. 1⅛" diameter rubber wheels are furnished, with machine screws for axles.

Wing and stab construction are very similar; both are built up with shaped and notched leading and trailing edges, and both have a moderate lifting section. The wing has an added ⅛" x ⅜" spar, and ⅛" washout is incorporated in each tip for stability. The center section is sheeted with 1/16" balsa.

The rudder is 3/32" sheet, and attached to the stab; the assembly is held to the fuselage by rubber bands, and keyed to hold the desired adjustment.

The large plan sheet shows installation of two different engines, and lists half a dozen more that can be used. Similarly, wiring diagrams, battery connections and installation of several lightweight receivers are detailed, with other possibilities suggested. The instructions are most complete, and include general data on radio model work, pre-flight checks, and the actual technique of R/C flying.


Silkspan covering material supplied
Shaped and notched leading, trailing edges; die-cut balsa ribs
Any make of .049 glo-plug or diesel engine recommended
Maple firewall and landing gear base
Bellcrank linkage for rudder control included in kit
Die-cut balsa formers, fin, gussets, wing joiners, etc.
Die-cut balsa fuselage sides
Lifting stabilizer cross-section
Finished dural gear with rubber wheels & mounting bolts
Plans detail installation and battery needs of popular receivers

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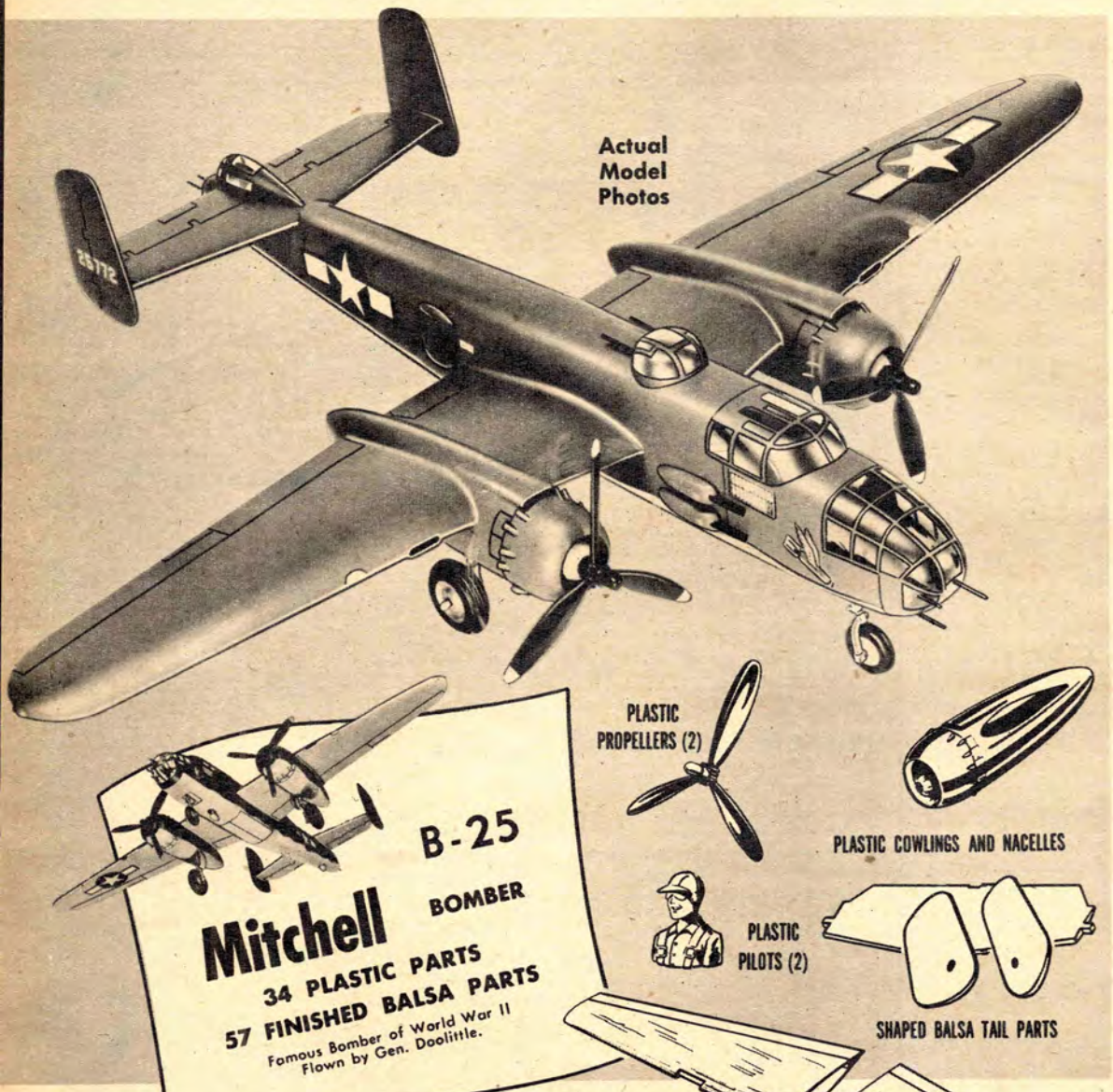

B-25

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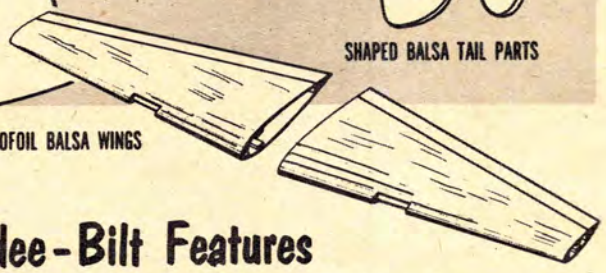

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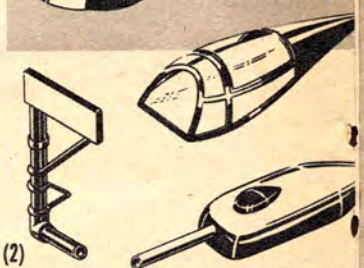

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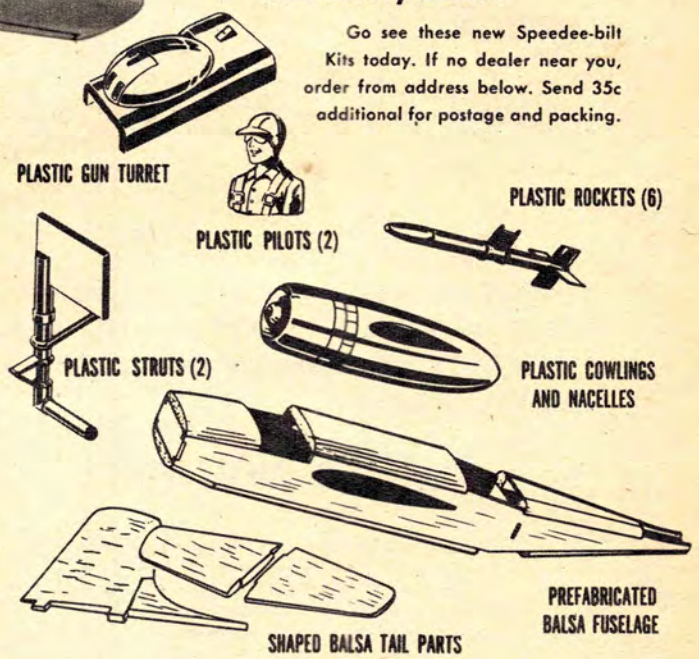

Some of the Many Completely Finished Plastic and Balsa Parts in These Kits

There is not enough space in these two pages to show all of the completely finished parts in each kit. Actually, there are more than six times the number shown here.

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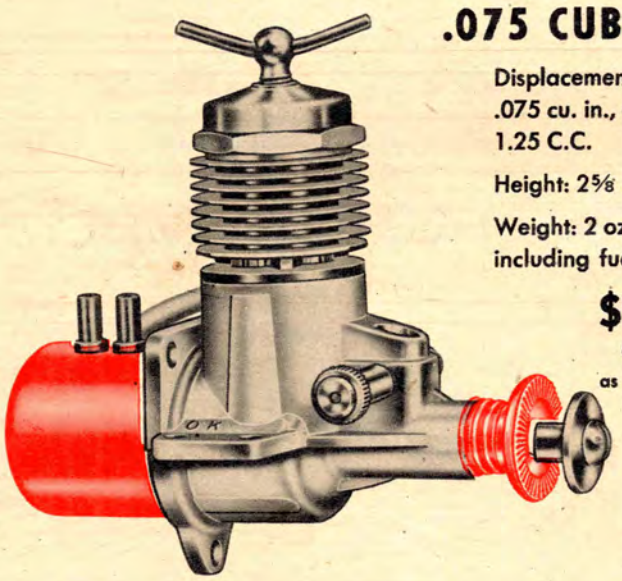

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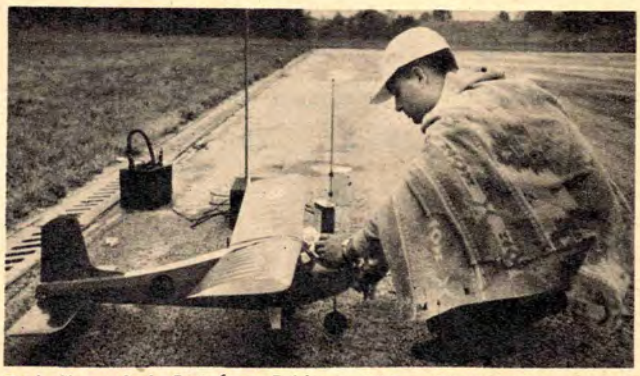
R/C at the NATIONALS

The rains came and how the wind did blow—last day at the National R/C event. Walt Good, left, with "Wag"; McEntee in cap, slicker.

■ "This just proves what I've been telling the boys," said director deBolt at the conclusion of the R/C competition at Willow Grove. "If you know what you're doing you can still win with rudder control only." His words were backed up by the performances of 1st placer Port who racked up the highest score on the stunt pattern—70 points, and Richard C. Allen of Dayton, Ohio, 3rd place flyer with rudder only who made the greatest number of precision pattern points—57. Allen tied with "Doc" Good who used a single channel tone control rig operating only the rudder.

In spectator interest among both casual visitors to the Naval base and other contestants radio outdrew all other categories. The number of autos present equalled those at the combined free flight sites; this was the case day after day. Entries numbered 141, with 40 piling in during the final week end. About 10 multi-channel systems were present, the remainder being rudder only or rudder plus one other control on one channel.



Dark Horse Jack Port from Fairborn, Ohio, with his original-design ship which won with "rudder only," 7 points ahead of Harold Bonner.

When activity lagged, event director Harold deBolt would whip out a Live Wire and stir things up a bit. Pop deBolt at right assisted.

Claude McCullough with his "Wizard of Ah's," drastically changed from last year. Farmer Mac hadn't flown ship since 1952 Los Alamitos meet.

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R/C MODELS

NEWS AND COMMENT BY HOWARD McENTEE

■ Big news as this is written is the Nationals that have just passed into history. The R/C event was the biggest ever held at a Nats or any other meet; exact figures have not yet been tabulated, but there were over 141 flyers present with planes—some of them with two or even three. As is always the case, many of these did not fly; there were actual scores tabulated for 217 official flights; quite a few others flew, either on flights for which no score was recorded, or in the evening "fun flying" sessions.

R/C Director was Harold deBolt, ably assisted by Red Hillegas; all other personnel—including judges and recorders—were Navy men. Whenever official flights slowed down for one reason or another, Harold would put one of his own planes in the air; this never failed to stir the contestants to renewed activity! Having attended the ill-fated National Capitol R/C event (and piled up two planes due to interference) Director deBolt was most conscious of the interference problem. Whenever a contestant hollered that he was experiencing this trouble, the little Locator (described in the August issue) was switched on; it must be recorded that of the dozens of times this was done, in not one case was an interfering signal detected! Seems that a Locator must be mandatory equipment for the officials of R/C meets from now on.

General concensus was that the flying was of a really high order. We saw some very good outside loops and upside down flight, as well as plenty of consecutive loops, vertical dives, rolls, etc. And it wasn't only the multi-control boys who were thrilling the crowds, either; the stunt flight point totals of the rudder-only flyers were most creditable. Before the meet started there had been some talk that maybe this one would show the necessity for splitting up the event into classes for rudder-only and for multi-control planes. The results do not indicate the time for this has arrived yet. The new rules worked out very well, and as expected, the provision that each flight must be considered in its entirety proved a real leveller.

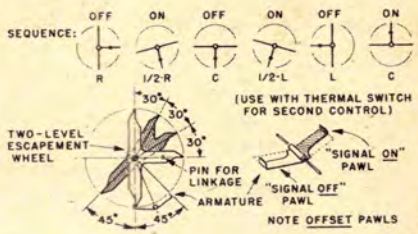
Of course, the only way the rudder flyers could hope to compete with the multi-control boys was to gain high points on the spot landings. That they did so is attested by the fact that a rudder man beat the entire field, and several others topped many of the multi flyers.

Equipment was much more varied this year, with all sorts of interesting combinations. There were several tuned reed outfits in use, also two that used tuned audio filters in place of reeds. Several proportional or semi-proportional planes placed high in the list, and there were countless unusual escapement combinations. As was expected, 27¼ mc. planes were the most numerous, with 465 mc. next and the hams on 50 mc. following. There was one plane fitted with an audio tone system, the RF equipment of which was on 220 mc.; this outfit worked very well indeed. We were a bit disappointed that more original design planes were not on hand; however, this very fact speaks well for the kit makers and magazine plan designs.

One odd result of the way the points are apportioned in the new rules is the fact that there were a large number of ties recorded. This undesirable condition might be cleared up simply by measuring each spot landing and applying points according to distance from the spot—say, to the nearest foot.

The end of the meet was a real thrill, with Howard Bonner in top place up until the last moment, and a three-way tie between Allen, Good and Port for second. The latter three tried flight after flight to break the tie, and finally Jack Port did so, to come out on top. The first ten places were: 1. Jack Port, Fairborn, O., 121 pts. (R—rudder control only). 2. Howard Bonner, Los Angeles, Cal., 114 (RME—rudder, motor, elevator). 3. R. C. Allen, Dayton, O., 111 (R); Dr. Walter Good, Bethesda, Md., 111 (R). 4. Lyle Sewell, San Francisco, Cal., 100 (RME). 5. John Curry, Manhattan Beach, Cal., 83 (RME); Frank Adams, Janesville, Wis., 83 (R). 6. Fran McElwee, So. Plainfield, N. J., 79 (RME). 7. Frank Yuhasz, Linden, N. J., 72 (R); Phil D'Ostillio, Fairfield, Conn., 72 (R, M or E). 8. George Sweet, Beloit, Wis., 67 (R). 9. J. Push, Manhasset, N. Y., 62 (?); Don Clark, Kensington, Md., 62 (R, motor cutoff). 10. Ray Regalia, San Francisco, Cal., 55 (RME).

A fully detailed report on the Nats R/C event will be presented in a later issue of Air Trails, with plenty of pix, outline 3-views of interesting original ships, complete list of all placers, and a tabulation of the plane and equipment used by all those who had a plane at the meet.



R/C event at the So. California Model Assoc. contest produced these winners: 1. Howard Bonner, Los Angeles; original plane with three controls operated by Curry audio tone equipment. 2. John Curry, Manhattan Beach; plane and equipment same as Bonner. 3. Colby Evatt, Santa Monica; modified Bootstraps, single channel sequence arrangement that allows use of rudder, motor and elevator. Since Bonner had donated all the awards, he refused to accept one, and had it passed to the next winner. Pat Regan, who sent this info, and George Bigler flew as a team, using two channel tone equipment without reeds.

Kentucky State Model Contest at Lexington had radio event with these winners: 1. Art Morgan, Wilmore; Rudderbug with proportional rudder, 50 mc. equipment, transistor receiver. 2. Charlie Ross, Woodburn; Rudderbug with Macnabb 27 receiver, Mac II trans. 3. Claude Curry, Louisville; original with 465 equipment. Jim Marvin, who sent us the above results, says they also had an R/C pylon race around three markers placed 200 feet apart, which was a big success.

Clubs and News. Seems the West Coast boys are going all out for R/C cliff

soaring gliders. Many of them claim it is lots more fun than power flying. John Curry writes that an 11-foot-span job by Bill Culler has been doing very well, and is flying so long that the only worry is whether the A batteries will last through the flight. Ship has 1450 sq. in. wing and weighs 7½ lbs.; it is equipped with 465 mc. radio.

Some months back we mentioned a 3-tube receiver ending in an E.D. reed unit that John had used for some time (see p. 10, April 1953 A.T.). We had many requests for the circuit of this receiver, and learn that John has had some prints made up which he mails out for 25c per copy.

Another well-known convert to R/C is Dale Root (Oakland, Cal.), who sez this is the worst disease he has ever had—but the most enjoyable! Dale has been battling a 300 sq. in. Half-A job with Thermal Hopper power; once he gained the proper respect for the power of this engine—and the resultant torque—he has been doing fine. Ship weighs 20 oz., has Aerotrol receiver, Bonner Compound esc., and a plain esc. for elevators; it will roll, loop, and even roll in a dive. He hopes to tackle inverted flight next!

Dale is member of East Bay Radio Controllers (meetings first and third Tuesdays of each month at Root's Hobby Hut, 6036 Telegraph Ave., Oakland); most of the members fly fairly small planes with simple equipment, though several have had large jobs with complex controls. The smaller and simpler ships have proven to be the most fun to fly, though.

Another West Coaster who is really intrigued with gliders is R. L. Brown (Ontario, Cal.), who writes that the advocates of this form of R/C are talking of having a glider contest. During a trip to Palos Verdes, Brownie saw Jim Jensen keep his Fiberglas covered glider up for over an hour; it was *still* up when he left.

Technical Dope. The variety and combinations in escapements appear to be countless; a new one (see sketch) is suggested by George Sackman (Jacksonville, Fla.) which allows three signal-off and three signal-on positions. Two of the latter give half-rudder for large smooth turns. The other on position may be used for motor control through a thermal or other type of delay device, so that when pulsed through quickly, the added control is not actuated. George is a scale model enthusiast and hopes to see some good scale R/C jobs soon.

For more precise control of surfaces actuated by geared-down electric motors, it is an advantage to have a motor that stops as fast as possible, after the juice is cut, so that the motor does not coast and shove the surface farther than intended. It occurs to us that "electrical braking" may be had by the simple expedient of shorting the motor, when it is not receiving current. This is especially effective with permanent magnet motors, which are what most of the control systems employ; the faster the motor turns, the better is the braking action. This may call for some tricky circuit work, but it will sure stop a spinning motor short.

Some of the widely used variable air trimmer condensers that are to be had in the surplus market have a little gimmick that can cause a lot of headaches—and even ruined equipment. John Worth notes that some of them have a flat grounding strap connected between the rotor (the center shaft) and the two threaded mounting bushings. If such a condenser were used in a transmitter like the Mac II, the result would be fireworks for sure, so check all such condensers (they are usually known as APC type) for this strap. If it is there, it may be cut away with a power hand tool, or you can "worry" it off with a file.

Commercial News. We have had a couple of notes in this section sort of bawling out the R/C suppliers for not letting customers know when orders are received and will be delayed, not answering correspondence, etc. There is the other side to the story too, of course; manufacturers have their hands full trying to get materials, components and machines from sources of these necessaries. Delivery dates are shoved back time after time, the wrong parts are shipped—or only (*Continued on page* 63)

Personable Jack Port from Fairborn, Ohio, receives the Roberts Radio Control championship trophy from the Navy's Lt. Cmdr. Howard Eddy. This award replaced an earlier Roberts' prize retired by 3-time winner Walt Good. In right hand Jack holds standard 1st place Exchange prize.

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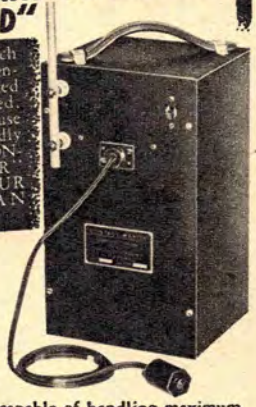

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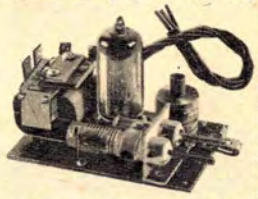

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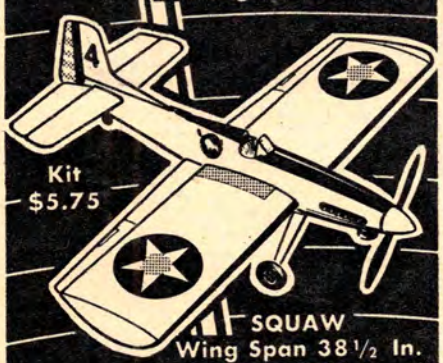

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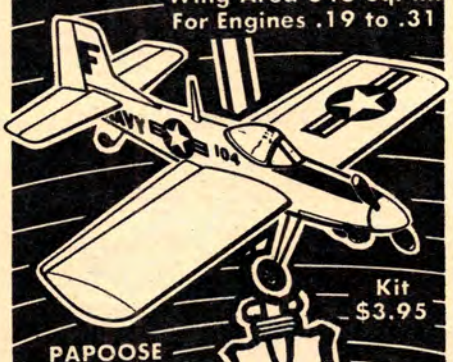

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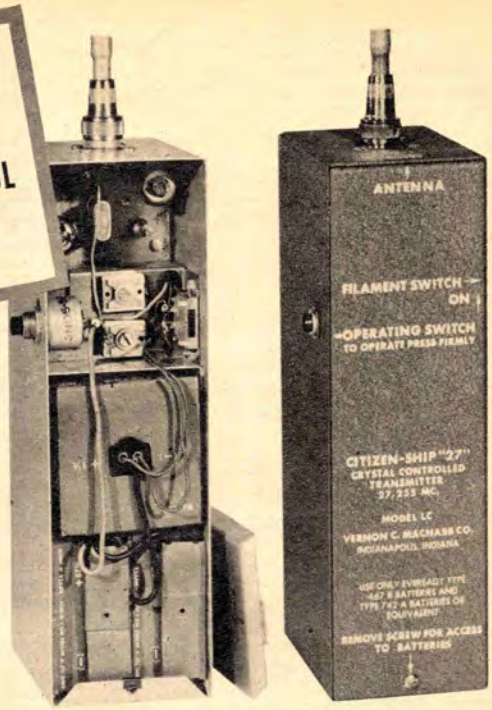


CITIZEN-SHIP "27"

Specifications

■ *Receiver*—Model No. LR. Overall size, 3¼" x 1¾" x 2½" high. Weight with tube (relay is built in)—4 oz.

Batteries required: A—1.5 V. at 100 ma. B—60 or 67½ V. Current without signal, about 1.5 ma (with 60 V. on plate); with signal, .5 ma. or less. Lightest recommended battery complement (two pencells and two 30 V. hearing aid B's)—4 oz.

Adjustments: one for tuning, one for sensitivity. Meter jack required on model, but no rheostat. Antenna—about 18-22" long. Relay has screw adjustments, quench coil has adjustable core; both are set at factory, seldom need resetting.

Transmitter—Model No. LC. Case is 9" x 2⅞" x ⅛" overall; switches and antenna connections project slightly more. Case is steel, gray crackle paint on outside, yellow protective coating inside. Weight with antenna and all batteries—5 lb. 6 oz. Antenna is three section aluminum tubing, 46½" long.

Batteries: A—1½ V. (Eveready 742 or equiv.) at 200 ma. B—135 V. (two 67½ V. units, Eveready 467 or equiv.), key-down drain about 17 ma. No B current drawn when key is up.

Controls: On-Off slide switch and push-button. Four screw adjustments inside case—normally need adjustment only when crystal or tubes are changed.

General Information. This equipment is intended for the Citizen's radio control frequency of 27.255 mc. The transmitter is unusual in that it is of the MOPA type, that is, master oscillator-power amplifier. While this circuit is a bit more complex than the simple crystal oscillators so widely used in R/C, it has the big advantage that nothing you do to the antenna will change the frequency or stop the transmitter from operating. You can actually hold on to the antenna, and while the signal will naturally be weakened, it will continue to go out on the original frequency. A circuit of this type is ideal for a hand-held transmitter, since the unit may be held in various positions, or even set upon the ground, without putting it out of operation. Actually, the unit is adjusted to put out the best signal when the case is held in both hands, with the antenna vertical.

Oscillator and amplifier tubes are the same—type 3V4—and this tube is also used in the receiver. Thus only a single spare is required for all positions.

The transmitter sends out an unmodulated signal when the key button is depressed; there is no signal and no B current drain with the button up. The antenna and amplifier output circuit are of a type that allow maximum power to be put into most any length of antenna. Thus, even though the power input to

the amplifier tube is relatively low—as judged by current R/C transmitters—the power put out into the air is ample for long distance control purposes. The use of the MOPA circuit further enhances power efficiency, since the amplifier circuit is inherently more efficient than the usual power oscillator. The power put into the oscillator of this transmitter is very small since it does not contribute to the actual output.

The Model LR receiver is a single tuber in the "hard tube" category. This means that tube life will be long and adjustments quite stable, varying only as battery voltages drop. The two main adjustments are made by means of slotted screws; one is marked "T", and governs tuning, while the "S" screw changes the sensitivity. These screws interact a bit,

but the instructions detail clearly how they should be set. The receiver comes properly adjusted, of course, but some installations may require slight resetting for best results.

The receiver may be used up to about 100 yards from the transmitter with no antenna—plenty for boat operation on a small pond.

A plate current meter is required for tuneup; this may be a milliameter of about 1.5 to 3 full scale reading. Plate current of the receiver is highest when no signal is coming in; it runs about 1.5 ma. with a 60 V. plate supply and a bit higher with 67½ V. The relay is normally set to operate at about 1.2 ma. and open at .85 ma. Since the excellent Sigma 4F unit is fitted, this range of current results in very reliable operation. It is recommended that batteries be discarded when they drop to 50 V. or lower, as idling plate current will be getting too close to the relay operating point. For the same reason, A cells should be replaced when they drop to 1.1 V.

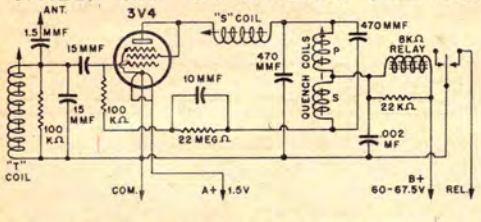
The receiver is mounted on a Fiberglas base, and there are five small Fahnstock spring clips to make connections. Four of these are on corners of the receiver base, and may be used to suspend the unit in the plane by means of rubber bands.

Like most hard tube receivers, this one may be affected adversely by spark ignition. However, a 10,000 ohm resister in the high tension lead right at the spark plug will usually clear this up.

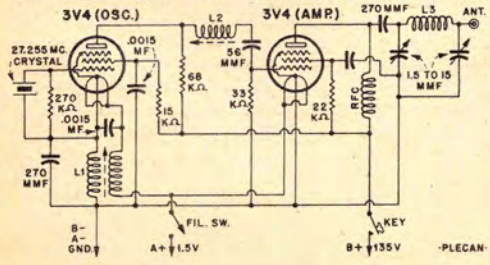
It is suggested that a double pole, single throw switch be used in the plane to control power to the receiver and escapement. This is necessary (unless a separate escapement switch is used) since the relay contacts close the escapement circuit when the receiver is turned off.

The instruction booklets furnished with these units are detailed and easily understood; that for the receiver includes six pages of written data, and three more of sketches showing installation, battery connections, and the like.

CITIZEN-SHIP LR RECEIVER (27.25 MC.)



CITIZEN-SHIP LC XMTR. FOR 27.25 MC.



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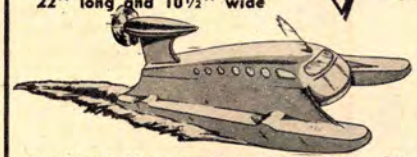

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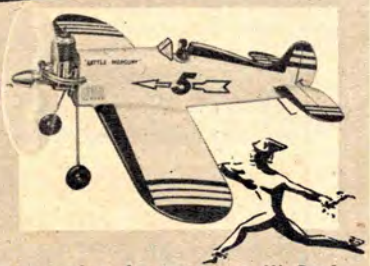

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The Nationals!

(*Continued from page 28*)

you want suspense, watch an indoor model working gradually to the sides. You can see it pass the girder with twelve inches to spare. Then you have to wait 30 seconds before it gets around in its deliberate circle. . . . Somehow, an indoor model gets your sympathy, and it is not uncommon to have spectators shout warnings to the model to "keep away."

Pete Andrew's Class D, 300 sq. in. "stick" was the prima donna. Pete played safe and started his official flights with 1400 turns, and got around 25 min. The ship looked so good that he threatened to put it away for future record trials, but the rest of the boys were pushing the time up, and he had to try again, with more turns. Somehow he managed to keep his model below the rafters and side girders during his three official flights. But on the very next flight, which was intended for record, his luck ran out and the model drifted to the sides.

Before the microfilm models started to fly at 11 a.m., the hand-launch gliders filled the air. (Incidentally, the first official flight of the meet was made by Fred Salmon of Keesler AFB at 9:35 in the glider event). While Carl Rambo from California was working up toward his 1 min. 7 sec., Ed Luca of Brooklyn was exhorting his fellow Skyscrapers to try their best to keep the honors in the East. When the morning session ended Rambo led with 1 min. 7 sec., but when glider flying resumed after 5 p.m. William Dunwoody of the Skyscrapers pulled a "Dodger" with 1 min. 9 sec.

The opening day can be taken as good indication of how the rest of the week shaped up organization-wise. It was a pleasant surprise to see the timers and tents ready to operate at 9 a.m. There was no time-consuming opening ceremony which usually distracts everyone from his job. As quickly as the flight lines formed, the timers chopped them up. Processing during the previous evening eliminated all but weight and stamp mark checking. At no time during the entire meet did one see a bottleneck. If you were ready, a timer was just a few minutes away—ready, willing and able.

Unfortunately, the opening day also showed how limited the field was for retrieving. A fair drift would take your model beyond the fenced boundary. You may have clocked six minutes maximum, but your model was gone, D/T'ing over brush or residential area. The Navy helicopter and cooperative phone calls plus prompt pick-up service brought many models back for another try, but many were lost or retrieved too late for that day's flying. The Easterners are used to such conditions, and the Westerners were good sports about it. The Navy did its best and no one could ask for more.

Since it would take a long article to describe individual events, max by max, crash by crash, and day by day, it seems best to give our personal impression of events so that those of you who were too busy in your own private corner might get an idea of what went on in general, while the stay-at-homers can realize they missed a good thing.

After all these years of 100-foot tow lines and tight-turning gliders, the Nordics presented a different picture as they were towed up to the peak of 320 feet (about 30% made it) and then glided in rather large meandering circles. Since most of them had sharp tip dihedral, we could not help but compare them with the Balinese dancers with their out-

stretched arms and upward-pointing fingertips. And the Nordics looked just about as graceful, if you go for that sort of dancing, in contrast to the gull-like wheeling of the old-type gliders we used to watch spiral upward. Since the day was not exactly thermal, we can't say how the Nordics would react to real thermal flying.

Near the Nordic take-off site the Wakefield boys had their day. As many of you may know, this is the last year in which there is no limit to the amount of rubber that can be used in the model. (Next year, only 2.8 oz. can be used.) And so, the ratio of rubber to total weight was carried to the extreme by many. A 3 oz. model with 5 oz. of rubber was nothing special. In effect, it's like having a 1000 hp engine in a Piper Cub.

The official Wakefield event was held during the day, but the unofficial Wakefield Team event was flown during dawn; it was won by the Detroit team.

A bit further down the line the gas-powered flyers had their fun. This type of flying can be likened to a thunderstorm cloud. Looking at it from a distance you see occasional lightning in it and hear a bit of thunder—on the whole it seems harmless enough. But if you had to fly through such a cloud your impression would be quickly changed by the violence inside. And so it is when you walk into free flight during the Nationals when every timer is on the firing line. It makes no difference what class of engines is gobbling up the gas, the excitement and high tension edge your nerves. You have no chance to have a quiet talk or even think. Your faculties are tuned to nothing but self-preservation. One has to keep his eyes on dozens of take-offs and make split-second decisions which way to duck. In fact, the action is much too fast to feel sorry for the sad cases. After a while one gets a peculiar sadistic feeling in waiting for a real honey of a splash.

The mortality of the free flight models seems to average about 50% or more. If the splashes were not absolute, the engine just cut out in time. (Can't vouch for the rumor that the timers were giving themselves "Ace" rating after timing five "splashes.") There were a lot of screaming, almost straight-up flights to show the boys that it could be done.

The "National" atmosphere is very catching. It gives the contestant a feeling that by merely being at the big meet, his models acquire unique properties they did not have at home.

With thunder and lightning diminishing in the free flight area, we drifted to the "country club set" where the radio control flyers were going through their tasks. From the outward appearance, the R/C event is ideal. Only one or two models can be in the air at the same time, and no testing is allowed. This sort of a thing gives the boys a lot of time to gossip and visit, which after all is one of the most important things to do at the Nationals—digging up secret information with which to "kill" the boys back home.

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Davenport, Iowa

It was very pleasant to lie on the grass and watch the other fellow sweat at the key. Every once in a while the tempo would quicken a bit as someone tried to bring his model for a landing over the cars. And the announcer would ask for applause when someone turned in a creditable performance.

R/C is definitely something to look forward to when you begin to feel bushed running after a free flight model. But first ask C. O. Wright what keeps him so young. He entered so many free flight events that we were sure he would end up as the National Champ.

As we chewed the end of a grass blade for the much needed chlorophyl, we noticed a youngster carrying his limited rubber model past the R/C area, then stop and look back on the scene with an expression of a poor kid looking at a hundred-dollar train set in the toy shop window. Somehow we wished that we could have had a talk with him and told him that free flight is the builder of men—it takes all you have and then some more. It may tie you in knots when no adjustment seems to work, but it raises you very high indeed when the model gets up and away, and has to be forced down with a D/T.

Yes, there is something in making a model which on being set free seems to have a life of its own, and knowing you put it there in the building.

In the control line area the boys were hot, and we mean hot. Out on the field one could work on repairs or stretch out on the grass to rest weary eyes and feet. But not so in the C/L area. The circles and pits were on the boiling asphalt. Just standing there for few minutes we could feel the heat seeping through our soles and gradually work upward until our shoulders began to droop and we had just

enough strength to drag ourselves to the hangar. But the control line boys did not seem to have time to think of heat as there was a lot of flying to be done.

We just had enough time to see one of the 140-lap team races. It was good to watch the pit crew in action. A talk with one of the team racing lads convinced us that it is here to stay. They seem to get worked up about their speciality as much as the Wakefield boys do over theirs.

Carrier event also drew a good number of contestants. At one time we had an idea that it was for the "Small Fry," but it now looks as though the papas have taken it over. When you think of it, it does require a bit of good control plus gadgetering to "plunk" on a restricted spot. It would be a bit more realistic, as someone suggested, if they had installed the "Small Fry" in the R.O.W. tank. Which reminds us. . . .

The R.O.W. tank measured 50 x 50 and held 18,000 gallons of water. A surprisingly high percentage of models took off. The water was almost to the top, and that helped. Most take-offs were too fast to give the spectators the thrill of watching the model gradually tear itself from the clutches of the water. . . .

An overall impression: as one of the "first Nationals" boys said, "Glad I came, didn't win anything but sure did learn a lot."

Eating and sleeping at the Nationals—what's that? Monday night was a bit noisy in the barracks; after that you could hear pins drop if someone had enough strength to drop them following a day on the field, evening processing line and rebuilding and repairing. As for eating, ex-G.I.s exclaimed "What food!" and queried the Chief if it was a put-up job. The G.I.s remember what they had during the war, and know how little you can now get for $8 which was the cost for the entire stay of almost a week.

On the whole, the 1953 Nationals were about as good as one should expect although the *final* day saw rain. They even got through with prize giving before eleven on Sunday night! Lots of fine workmanship shown in all events. Many trying to design their own, which is a good sign for a healthy future. Matt Sullivan and his crew, and the Navy should be proud of the excellent job they did for us.

—FRANK ZAIC

Statement of the Ownership, Management, and Circulation required by Act of Congress of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233), of Air Trails, published monthly at New York, N. Y., for October 1, 1953.

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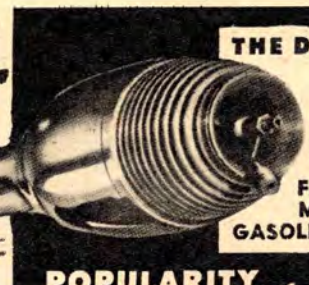

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Western

(*Continued from page 40*)

to its 1948 short nose and tail moment. Bob flew his to 2nd place.

A recent letter from Ray and Virginia Randall finds them the driving force in the WAM flying scale and carrier events. Ray is just a little perturbed over the lack of entrants in these two events and is working hard trying to stir up interest. The flying scale contests are now, divided into two groups, beginner and advanced, along with an idea of handicapping the entrants to try to even things up. Strange to say, but it seems like this idea has brought a lot of models out of hiding. To further stimulate interest, trophies are awarded in proportion to the number of entrants.

The Western Associated Modelers contests are getting so large that they are giving serious consideration to limiting the events any single contestant may enter to 3 in number. It seems like more contestants are showing up each meet while the flying time remains the same. They feel that every contestant who enters should be given an opportunity to fly, so if it becomes necessary to limit entries this will be the manner in which it will be done.

Control line payload appears to be catching on with events scheduled in two future contests. PAA has put up one of their swell watches, while Trans-Ocean is supporting a cargo event at another meet.

The Newark Model Busters contest finds a lot of familiar names in the list of winners —Vic Garner, Leland Ward, Joe Foster, Kevin Terry, Karl Caldwell, John Lendeman, Rudi Aron. Kenneth Andrus, local boy who made good, lifted 3 lbs. 15 oz. in the PAA-Load event, 1¼ ounces more than Bob May.

There has been a very exclusive club started in California which totals only six known members at the present time, but which continues to grow at each contest. This club is known as the 3-Six, 4th-Flub Club, for those model builders who manage to achieve those 3 perfect flights only to flub out on their 4th. Latest member was Louie Culler who at the Thunderbug's Annual turned in 2:15 on his 4th. Paul Gilliam "Tweeked" his way to 4:19 to barely escape membership at this same contest. Gene Wallock turned in 2:01 at an earlier meet, Dino Cocchi 2:17, Vern Pitts 1:39, F. L. Swaney 1:28 and Don Puskerich with only 56 seconds was the man who so far is President. Boy, what a club.

Up in Fairchild, Washington, we hear by way of John Brodbeck of Lt. Moorehead, who if memory serves had that beautiful F-82 at the '52 Nats, who is getting the most out of what he has by flying a ship for U-control duration. Seems like he flew his ship for 3 hours, 30 minutes and 18 seconds before he got a little tired and landed it with a whole hour of fuel left. At take-off time the ship's weight was 7 pounds, 11 ounces—3 pounds and 11 ounces of fuel. We don't know what he is doing—but he expects to turn 140 laps on one ounce of fuel with his team racer!

The Thunderbugs with F. L. Swaney at the controls put on a real old-fashioned meet, plenty of super flying weather, timers with good eyesight, lots of counciling, and trophies that were "for real." Times were high, no wind till one o'clock. Toshi "Real Slick" Matsuda proved he can fly 'em as well as slick 'em by walking off with open sweepstakes, while Hal Cover and Ronald Galman tied for junior, Ronald getting the nod because of higher times; Paul Gilliam won A with 3 sixes plus, Louie Culler B with 3 sixes plus, Tosh Class C, and Dick Everett Half-A (no three sixes).

F. L. Swaney did his best "flying" ever in running the meet, cooling down an overzealous contestant who wanted ten seconds added when he hung up in a telephone wire, another who claimed a timer lost his model too soon. The hot dogs another Thunderbug made were really super. All in all a good contest, a little slow at times because everyone ganged up to fly, but a good job well done.

By the way, what is going on up North? Don't hear from you boys any more.

—DICK EVERETT

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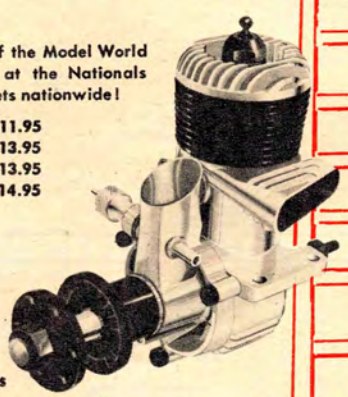

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DYNA-MODEL PRODUCTS COMPANY
76 SOUTH STREET, OYSTER BAY, NEW YORK

Southern

(*Continued from page 41*)

cess. There are plenty of civic-minded men in Orlando who would raise $5,000 in a week's time. Strong leadership is needed and we hope you find it!

Anyone knowing the whereabouts of Ernest Brewer, who directed the Alexander City, Ala., contest last May 3 is urged to communicate with the writer.

Last month we told you that George Perryman sent his towline glider to the International Glider Contest in Yugoslavia to be flown by proxy. The Lockheed Aircraft Corporation of Marietta, Ga., realizing they hadn't supported model aviation all season, sent George over with all expenses paid. By now you know the results. What's important to us is that Lockheed decided to help support the industry's minor children—the modelers!

Greenville, S. C., is now holding Sunday afternoon combat contests. This will go a long way to revive interest in Greenville. Jack Scharpf is the power behind the guns with Art DeLaney supplying the ammo.

The White Co. opened a thriving model shop in Columbus, Ga. For many years model building and flying have been a dead duck in Columbus. Now they are holding classes, teaching beginners to fly and the older modelers are back with their balsa wood and glue. Betcha they have a contest early next summer!

The Albany, Ga., model club is the first to consider a contribution to the treasury of the Southeastern Federation of Model Airplane Organizations and Sponsors, Inc. Dom Kimsey presented the objectives of the Federation. We urge all organized clubs in Miss., Ga., Ala., S. C., Tenn., and Fla., and N. C. to send a contribution to Lamar Parker, Treasurer, c/o Macon Telegraph, Macon, Ga. We are building a fund to cover postage, telegrams, stationery, and ultimately to buy a supply of stop watches which can be borrowed by member clubs when they hold contests.

As the support of this organization grows, it will permit sending expert officials to the larger meets in each state and furnish standard flight cards, score sheets, registration cards, and maybe one of these days enable contributing some trophies to each contest. This is your Southern organization . . . help build it up. The Federation is also making an effort to get low rates in all hotels where contests are held. The Georgia Hotel in Atlanta and the Gordon in Albany have set shining examples.

During Eastern Air Lines "Span of Flight" exhibitions modelers in these cities should contact their Eastern representative and offer to put on flying exhibitions. They'd welcome it!

What you going to do from September to next May? Write Lloyd Wason, c/o Decatur Hobby Shop, Decatur, Ga. Ask him for a copy of his Winter Schedule—a meet a month in different sections of Atlanta. So long for now!

—R. H. ELLIOTT, BOX 5078, ATLANTA 2, GA.

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AT-11-53

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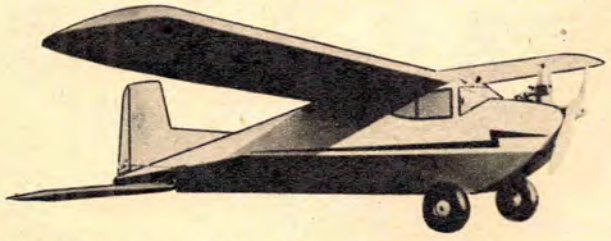
THE FABULOUS "LIVE WIRE" R/C MODELS

LOOK TO "DMECO" FOR THE TRIED AND PROVEN LEADERS IN THIS FIELD!



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This is the model especially developed for R/C training. It uses .09 to .15 engines and carries any reliable radio setup with ample battery supply in its removable radio unit. Complete building and radio instructions furnished. Simple, rugged sheet balsa construction makes a fine long lasting model. a really complete kit in every way! $6.95

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For those who wish the ultimate in R/C flying this "Custom Built" .19 powered "Senior" is for them. A real contest performer capable of using anything from a simple single channel radio to the fabulous 5 channel tone systems, terrific results with any of them! Complete building and radio instructions furnished. it also uses a removable radio unit. A "one of its kind" custom built kit. $14.95

R/C MODELS ARE DIFFERENT!

The flying of radio controlled models is the closest approach to real flight possible. With simple radios and rudder control only, today's modeler can perform 90% of the flying possible with full scale planes! Yes, he can take off a runway under full control, fly to where he wishes, execute maneuvers, return to the runway and land right at his own feet! The fact is that this is being done every day by thousands of flyers of all ages, really the ultimate in model flying!

Dmeco's "Live Wire" models have been developed exclusively to use the radio equipment to best advantage and to give the finest flying possible. Contrary to what may be thought, it takes specially designed models to fly R/C successfully. The "Live Wire" is the leader of these special designs having been under intensified development for over 18 months until it met all R/C requirements. Now, from field reports it is known that they are doing a fine job the world over, winning contests and training more R/C pilots than it was ever thought possible! The special R/C flight characteristics of the model make it simpler to learn with and easier to win contests when flying a "Live Wire"! Step into your dealers today and examine one of these truly deluxe kits, complete in every way to fill the desire of the most discriminating modeler!

FREE! SEND FOR BOOKLET ON RADIO MODEL FLYING!

DE BOLT MODEL ENG. CO.

WILLIAMSVILLE N.Y.

The Shadow
Unusual adventures of a man whose dual existence is the nemesis of the criminal mind.
A weekly mystery feature of the
Mutual
BROADCASTING SYSTEM
MBS

Denny Davis

(*Continued from page* 38)

of nose with 3/16" sheet (former C to B). Use plenty of cement on forward part of fuselage—the weight here is good! Fuel proof nose, inside liberally around tank vents, where cemented, etc. The chute compartment is formed from a piece of cardboard or celluloid (bent around inside of this section). Form parts of chute release as shown on plans, install handle of timer and cement in place using small wood wedges between it and crutch.

Cement rear "side pieces" in place, noting carefully how rudder is notched into crutch and backbone. Assemble rudder and when dry cement in place on backbone and in notch on crutch. Add dorsal and subrudder pieces: "Eyeball" rudder from front to make sure it is perfectly straight to center line of crutch. Fuselage should be made ready for planking. Sand whole assembly, leveling for contour of sheet. Use medium-light 36"x3" sheets (1/16" pre-sanded to 1/20"). Plank over all longerons, firewall, side pieces, etc. Pylon is planked with pre-sanded 1/16" sheet with grain running parallel to leading of pylon. Do not plank over L.E. of plyon; ribs are recessed for planking to L.E of pylon. Use very light 1/32" sheet on rudder. Plank bottom of fuse with grain running diagonally to center line of crutch. Make chute door from 1/16" plywood. Install hinge using silk around aluminum tube to door. Hinge wire is secured to fuselage sides (inside). Be sure to leave slot in planking for timer strap. Locate release hickey so that wire is through about ¼" when timer knob is full forward. Silk and cement when located. Before platforms are added check alignment and incidence angle. Slight corrections can be made with platforms; dihedral angle is put in platform and let dry before cementing in place. Use "plastic balsa" for fillets between platform pylon, fuse pylon root in front, etc.

Complete building details are available on the full-size plans.

McEntee on R/C

(*Continued from page 51*)

a small part of an order is sent, suppliers just refuse to answer inquiries, and so on. Then, there is always the guy who forgets to put his address on an order, or neglects to enclose the necessary funds, or asks a dozen questions on items the manufacturer never made. So, don't think the R/C business is just a bed of roses!

Several new items seen at the Nats. For example, R/C winner Jack Port was using 27¼ mc. single hard tube receiver that he manufactures, which weighs 4.15 oz. with tube and Sigma 4F relay. It is intended for 60-67 V. and sells for $19.95 complete. It is called Controlaire and may be had from Ace Model Supply (331 N. Elm St., Fairborn, O.). Jack also used a Controlaire escapement, which is a two arm, double coil job that has a hold current of 125 ma. It sells for $9.95.

Proportional actuator may be had from M. S. Adams Co. (Janesville, Wis.) for $6.45, weighs 1.85 oz. and is of the double coil type It draws about 200 ma, on 4½ V., may be used up to 6 V. for greater pull. Was used by high placers F. Adams and G. Sweet at recent Nats.

A new low cost escapement is available from Citizen-Ship Radio Corp. (909 E. Westfield Blvd., Indianapolis 20, Ind.) Called type PSN, it is of 2 arm style, and intended for use on 3 V. It has a 5 ohm coil, is of rugged but simple construction.

Dover Electronics Corp. (201 E. Blackwell St., Dover, N. J.) is entering the R/C field. Concern has automatic pulse box, field strength meter, etc. Send for free catalog.

Latest releases from Ace Radio Control (Box 301, Higginsville, Mo.) are a 4 watt transmitter kit, and a Field Strength Meter kit. Former uses single 3D6, sells complete with crystal, antenna, tube, case, for $12.50. FSM kit costs only $1.50, is sold less meter, and intended for use with meter normally used for receiver checks. Instructions show how to add transistor for boosting reading of less sensitive types.

Experimenters engaging in audio tone work will be interested to learn that tuned filters may be had from Babcock Radio Eng. Inc. (7942 Woodley Ave., Van Nuys, Cal.) for $9.00 each. They weigh about 3-1/3 oz. each, come in several different frequencies, and occupy about 2½ sq. in. apiece.

Wilson's of Cleveland (425 Lakeside Ave. N.W., Cleveland 13, O.) can supply on special order their No. 3-101 miniature electric motor, which is fitted with silver-graphite brushes for long life, and is designed for use on 1½-3V. Running without load, current drain is about 400 ma., while stalled current is 1.7 A. Unlike their No. 6-100, mentioned here last month, the 3-101 is not generally available in hobby shops, may be ordered direct. Price for either type is $2.50.

A new type of covering material known as Aero-Cloth will be marketed by Products Development Co. (1743 S. Magnolia, Ontario, Cal.). It appears to be a fibrous product with exceptionally long grain, and is made in two weights, and a variety of colors. Should be of interest to R/Cers because of exceptional toughness.

"I think it looks silly too, but the designer claims it will do 850 m.p.h."

AT LAST! WORLD'S LARGEST MAKER OF R/C EQUIPMENT FOR ARMY-NAVY TARGET DRONES

brings you TRUE PROFESSIONAL STANDARD

Radio Control

Wt. 5 oz.

EXCLUSIVE FEATURES:
Receiver Model BCR-3 Ultimate in fail-safe design. • 3 hard tubes, each doing its own job. • Constant carrier with audio tone. • Greatest relay current change—0 to 6 Ma thru 10,000 ohm relay. Signal increases Relay Current. • Greatest sensitivity—5 microvolts for reliable operation. • Hermetically sealed relay—no dust in contacts, no adjustments ever. • As easy to handle as your broadcast receiver: no tuning tricks, no hand capacity, no overloading, non-critical antenna, tunes up with a pair of headphones. • Our own design of components, not available to other R/C manufacturers. • By far the most rugged equipment available. • Self contained arc supression. • No tube selection required, any good tube works in any position. • Reliable performance thru a wide range of battery voltage and conditions. • May be used with any escapement.

DICK SCHUMACHER Dean of Radio Control Modelers says: "Most reliable, easiest to handle radio control ever — and I've tried them all!"

Transmitter Model BCT-2
Crystal controlled on 27.255 megacycles. No license required.
Contains separate modulator tube and audio oscillator.
Uses short loaded 3 foot whip—no need for long unhandy antenna.
Range is more than adequate for any radio controlled flying.
Has radiation indicator on panel, simply tune for maximum output.

Order Direct From Factory Today

Competitive prices
BCR-3 Receiver Complete with tubes and relay and connector $29.95
BCT-2 Transmitter Complete including crystal, tubes, antenna (less batteries) $39.95
BCR-3 Installation Kit ..... $ 2.95

Terms: Cash with order or ⅓ with order, balance C.O.D.
Note: On prepaid orders, factory pays freight.

YOU DON'T HAVE TO BE A RADIO ENGINEER TO USE THIS EQUIPMENT

BABCOCK RADIO ENGINEERING, INC. Write for free literature giving full details. 7942 Woodley Ave., Van Nuys, California
Dealer inquiries invited.

OWN A *REAL* WASP!
See-buy-fly the new power-ported Model H . . . *at your dealer's.*

NOW ONLY
$5.95 FREE FLIGHT
$5.70 U-CONTROL

HOLLAND ENGINEERING CO.
11346 EAST BROCKWAY STREET
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NEW! 2 EASY-TO-BUILD MASTERPIECES

Perfectly scaled! Authentic in every detail!

HARCO '40' DELUXE CABIN CRUISER

KIT B-10M
Length 27½"
Beam 8½"

$10.95

Power Boating • Radio Control • Shelf Model

Mahogany used extensively. All parts die-cut and notched. Plastic windows. Yachting ensign. Venetian blind material. Complete power fittings. Full-size step-by-step drawings and instructions.

Deluxe 64-pc. Scale Marine Fittings, Set B-10F $4.50

HIGGINS 26' EXPRESS CRUISER

KIT B-9 Length 15"
Beam 5¼"

$3.95

Mahogany used extensively for cabin sides, windshields, bulkheads, instrument panels. Scale marine fittings from bow light to exhaust. Complete power drive unit. Authentic decals. Step-by-step instructions.

SEE THESE OTHER STERLING MODELS

Planes	Kit	Price
Monocoupe	C-1	$4.95
Howard Pete	C-2	5.95
Mr. Mulligan	C-3	4.95
Waco	C-4	5.95
Polish Fighter	C-5	5.95
SE 5	C-6	5.95
Ryan S-T	C-7	5.95
Fokker D-VII	C-8	5.95
Ring Master	S-1	2.95
F-51 Mustang	S-2	2.95
Yak-9	S-3	2.95
Space Master Junior	S-4	2.25

Power Boats	Kit	Price
Richardson 27' Cruiser	B-1	$5.95
Higgins 17' Speedster	B-2	4.95
Chris-Craft 47' Buccaneer	B-3	7.95
Century 20' Resorter	B-4	3.25
Century 20' Sea Maid	B-5	2.95
Chris-Craft 32' Cruiser	B-6M	9.95
Chris-Craft 50' Catalina	B-7M	11.95
Century Sea Maid'20'	B-8M	7.95

Scale Marine Fitting Sets

Set B-6F 3.50
Deluxe 34 pc. set for Kit B-6M
Set B-7F 4.95
Deluxe 66 pc. set for Kit B-7M
Set B-8F 3.95
Deluxe 35 pc. set for Kit B-8M

Sterling models
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Here at last! MATCHED MARINE FITTINGS

A really matched set of power fittings to make up the finest marine drive unit ever offered! Sensational new nylon power propeller. Every part engineered for maximum performance! Gas Marine drives include brass flywheel.

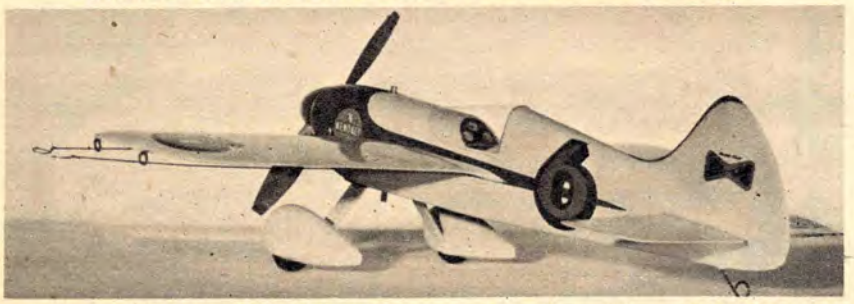
½A GAS MARINE DRIVE $2.95 A or BC GAS MARINE DRIVE $3.95
ELECTRIC MARINE DRIVE $2.25

INDIVIDUAL FITTINGS

½A Universal	$ .85	A or BC Universal	$1.25
½A Flywheel	.85	A or BC Flywheel	1.25
½A Shaft & Stuf. Box	.25	A or BC Shaft & Stuf. Box	.35

Nylon propeller 1⅛" dia. x 1⅛" pitch . . . $ .75

Have YOU Tried ½A Team Racing?



For a BLUE RIBBON Winner every time Fly a DIL-BOD

14" Span Designed Especially for .049 and .051 Engines

$2.50 **Southwestern Model Mfrs.** P. O. Box 571 W. Tulsa 7, Okla.

Victory!

(*Continued from page 24*)

in this 18th running of the Wakefield contest were Argentina, Australia, Belgium, Canada, Denmark, France, Germany, Great Britain, Guatemala, Holland, Ireland, Italy, New Zealand, South Africa, Sweden, U.S.A. and Yugoslavia.

Nocetti of Italy was the first man off, getting away to a maximum duration flight of 5 minutes. This was the start of the greatest collection of max's ever seen. At the end of the first round, we were amazed to find a total of 27 maximums had been turned in. We were in a four-way tie with the Swedes, Italians and French, each country having three men with maximums. Ted Evans got the toughest break of round I, being timed O.O.S. at 4:32.

The second round started after a two-hour break for lunch. Weather was still good though somewhat spotty. Quite a few dropped out of contention in this round, with only 17 maximums recorded. A real misfortune happened to George Reich in this second round when his model, timed to the fullest, came out 1 second short of a maximum. Six persons were tied with doubles, these being Joe Foster, Hugh O'Donnell, E. Scotto, Mrs. I. Samaan, Hakansson and Moberg of Sweden. Any one of these by getting a third maximum could rule out all others, since they would have a perfect 15-minute total. Mrs. Samaan and Hakansson came up with short flights of 4:32 and 3:28, respectively, while Moberg was having difficulty locating his spare airplane. After doing 5 minutes, he cracked up his first model and then lost the spare. Hugh O'Donnell, youngest of the

"Best Ever" THE ACE PICK-UP

A HUGGY LITTLE BUGGY.. FAST ON THE PICK-UP!

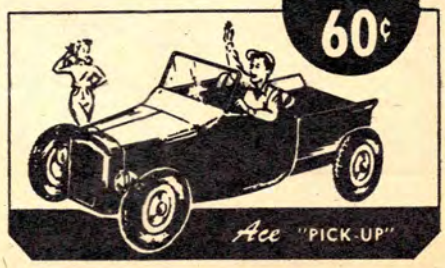
Simplified • Anyone can Assemble

O.K. *Eager Beavers!* Here's the kit you asked us to make—a snappy "Pick-up" and the gals go for it, too. Mostly ready shaped parts, easy to build. Buy a kit now—paint it your favorite color and "wow" the gang. See other Ace kits also, at your dealer's store. Add them to your collection, or start one now. It's fun!

ACE "PICK-UP" KIT No. 1R

AT ALL MODEL AND HOBBY SHOPS

KIT COMPLETE 60¢



O'Donnells (only 14) and E. Scotto matched Foster's perfect flights, causing the first triple tie in the history of Wakefield flying.

At the suggestion of team manager Bill Fletcher, no photographers were allowed on the runway for the fly-off, giving every chance possible for a clean take-off. The weather at this point, incidentally, was well nigh perfect.

First off was the Argentinian, Scotto. Climb was unimpressive, model getting only 2:30. Next off was Foster with a very fast, snappy climb. The ship went in right-hand circles till the power diminished and then the left-hand glide trim took over. Glide was exceptional, picking up a few slight bumps on the way down for a 7:25 flight. Meanwhile, Hughie was having trouble with a broken strand. He elected to tie it and thereby ran over the 3-minute limit imposed for fly-off. He flew anyway, getting an amazing amount of altitude for a 6:20 flight.

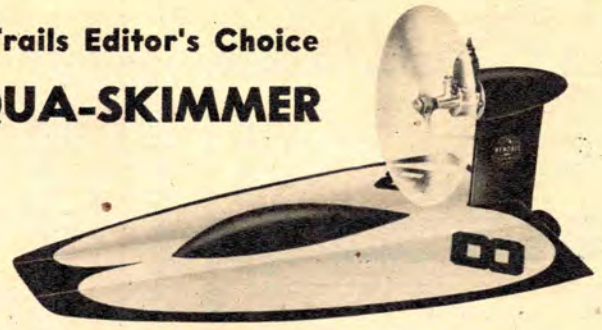
Details of the three models: Scotto's had a conventional two-blade folding prop, retracting peg for take-off, single skein motor and shoulder mounted wing. O'Donnell utilized a Bilgri X type prop, feathered, a single skein motor, and fixed gear. Prop was 22"D x 22"P. Foster used a twin folder, retracting peg, and return gears. First three flights were made with English Dunlop but the fly-off was made with Pirelli motors borrowed from Cliff Montplaisir. Like Dave Kneeland in gas, Joe made all four flights with just one model, having eliminated his spare while test flying.

The cooperation among our team members was something to behold. Having two teams plus a manager, we were able to enjoy our limit of helpers on the runway with at least two bicycles spotted downwind for recovery purposes.

BLUE RIBBON MODEL

Air Trails Editor's Choice

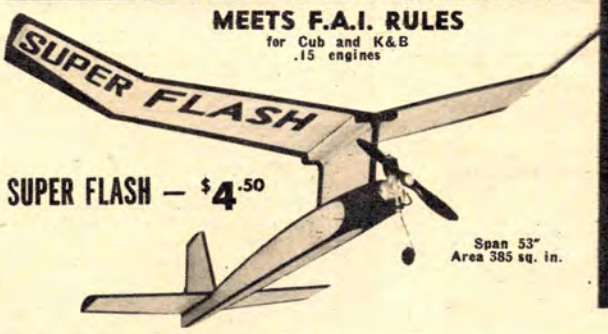
AQUA-SKIMMER



for full details turn to page 45 this issue

A star performer on the lake, pond and wading pool, the Skimmer measures 15½" long and 7⅞" beam. Uses from .035 to .065 engines. Simple assembly No fragile framing, planking, carving, or flywheel. Shafting, stuffing box or water strut not needed. Kit contains shaped hull, decals and detailed plans for the inexperienced builder. $1.95

MEETS F.A.I. RULES
for Cub and K&B .15 engines



SUPER FLASH — $4.50

Span 53"
Area 385 sq. in.

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JUNIOR AERONAUTICAL SUPPLY COMPANY
203 E. 15th ST.
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ATTENTION!
Radio Control Fliers

THE FIRST MAJOR CHANGE IN BATTERY CASES IN YEARS

ACME now makes a complete line of high quality battery cases. We have designed a battery case for just about every battery need. For Radio Control, Motor Boats, Cars, etc.

For 1 Cell 20c ea.
For 2 Cells 40c ea.
For 3 Cells 60c ea.
For 4 Cells 75c ea.
These prices are for either the new miniature pencell or regular penlite size battery cases. Battery cases are all completely insulated. There is no current in the metal of the battery case at anytime, which insures accidental shorts.

Illustration shows a single and a double battery case for the new miniature pencells such as the Burgess #7.

NOTE: Insulation and solder lugs at both ends for each battery. These battery cases are made for 1-2-3 or 4 cells supplying from 1½ to 6 volts as needed. They may be wired in series or parallel giving you desired voltages.

But Look! Here Is More

Here is the big news—Battery Cases to hold 22½ volt batteries, such as the Burgess U-15. Radio control fliers have acclaimed these battery cases the greatest thing since R.C. started.

Made in 2 Sizes
For two 22½ volt batteries....50¢ ea.
For three 22½ volt batteries...85¢ ea.

In addition, we have made high quality battery cases for one or two medium or large standard flashlight batteries.

Single....25¢ Double....40¢

COMING NEXT MONTH—NEW ACME ANTI-STALL RADIO CONTROL TANKS

If your dealer does not stock Acme Products Order Direct

DEALERS—JOBBERS—ORDER NOW

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Built-In Fine Mesh Filter Screen Protects Your Engine When You Fill Up With a

TIGER FUEL PUMP

Forced Feed
Piston Type Pump
All-Metal Construction
Delivers Fast Steady Fuel Stream
Fine Copper Screen

Special Half Pint Size

Get a Tiger Fuel Pump. It's a swell deal for your model engine. No more spilling of costly fuel. No waste or muss. No foreign matter to injure your engine and spoil dependable operation. Get a Tiger Fuel Pump with the fine metal filter screen, screw it on any standard fuel can and you're ready to go. Three sizes—half pint, pint and quart. At your hobby dealer.

Fits Standard Screw Top Can

Half Pint
Pint
69c

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GYRO Lowest Prices—Fully Guaranteed RADIO CONTROL Equipment

SPECIALS!

SIGMA 4F RELAYS $4.50
OSR type Quench Coils $1.65
PE157 SUPPLY for MAC II Transmitter—including 2 Volt Battery less Speaker $14.95
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FLEA CLIPS—4 for 10c; ALNICO 5 Disc Magnet—for Rudder Control $1.15

TRANSMITTERS

New!! SUPER-POWER GYRO-MAC II R/C TRANSMITTERS. Guaranteed extra-long distance Radio Control with NEW ANTENNA SYSTEM! Full 5 Watt Power. Similar to MAC II Design.
MODEL X1—GYRO-MAC II 2 Tube Transmitter. Complete, tested, ready for use. Mounted in attractive portable case with carrying handle, built-in meter, Super Antenna System, vibrator power supply, battery, etc. Ready for use anywhere! GUARANTEED $37.50
MODEL X2—GYRO-MAC II 2 Tube Transmitter. As above, except for operation on external 6 Volt (car) battery. Complete with built-in Dynamotor, meter, Super Antenna System, less battery. GUARANTEED $32.50
MODEL X—GYRO-MAC II 2 Tube Transmitter UNIT. As used in above Transmitters. Only 3x4x1½ in. Wired & Tested, Complete with Tubes and Crystal, for installation in your own case. GUARANTEED $16.50

RECEIVER KITS

For Radio Control—Parts Packages for any following Receivers, including diagram & all parts (except tubes, relay, OSR coil)—LORENZ 2 Tube; MILLER; SIMPLE SINGLE $2.85
RECEIVER KITS—with all parts including tubes, SIGMA 4F Relay, etc. LORENZ—$14.25; MILLER—$10.15; SIMPLE SINGLE $10.35
R/C RECEIVERS—any of above Kits wired & tested—ready for use—ADD $5.00

FIELD STRENGTH METER & MULTITESTER

Is your Transmitter and Receiver working properly? Find out with this new Combination Field Strength Multitester. Checks Transmitter output, frequency, voltages & plate current; Receiver voltages & plate current. Complete with the following ranges: Field Strength; 0-5 Volts; 0-100 Volts; 0-5 Ma.; 0-50 Ma. Housed in small portable case, ready to operate. Guaranteed $12.95

2 VOLT VIBRATOR POWER SUPPLY KIT—for R/C Transmitters & Receivers, 180 Volts @ 30 Ma., all parts & instructions, less battery $8.95
2 VOLT VIBRATOR POWER SUPPLY—above Kit complete—ready for use—ADD $5.00

DYNAMOTORS

6 Volt input/180 Volts @ 225 Ma. output.. $9.50
6 Volt input/350 Volts @ 225 Ma. output.. $9.50
6 Volt input/180 Volts @ 50 Ma. output.. $7.95
CRYSTALS—27.255 mc., Peterson Z9A..... $4.75
Crystal Holder 15c

RELAYS

SIGMA 5F—Dual Coils—10,000 ohms..... $5.95
SIGMA 41FS—Sensitive 10,000 ohms—SPDT $1.95
SIGMA 5F—130 ohms—operates on 1½-6 Volts $3.95

BATTERIES

Dry, 25% Discount off List Price—ALL SIZES—Fresh Stock—EVEREADY
STORAGE BATTERIES—NT6—Miniature 6 volt, 2¼" by 1¾" by 3½" $2.95
BB54—2 Volt—size—3" by 4" by 5½"..... $2.75
ER-40-6—6 Volt—size 4¾" by 7" sq. $5.25

CHARGER

For Storage Batteries—2 Volts to 6 Volts—self regulating with Charge Indicator "6A."..$7.95
CHARGER—for Dry Batteries—Use one set of A & B Batteries all season! Recharges all dry batteries 1½ to 90 Volts $6.50
VIBRATORS—6 Volt 4 prong $1.35
2 Volt Synchronous $1.00
METERS—Accurate—2" sq., 0-500 Microamp. $5.85; 0-1 Ma. $3.75; 0-3 Ma. $2.95; 0-5 Ma. $2.75; 0-50 Ma. $2.85.

New Tubes—GUARANTEED—Low Prices

RK-61 ....$3.45	XFG-1 ....$3.35	3D6 .....$ .95
1S4 ..... 1.35	1VS 1.95	3A5 ..... 1.35
1S5 ..... 1.10	3A4 ..... .95	3S4 ..... 1.35
		3V4 ..... 1.15

COMPONENTS

FLEAWEIGHT HOOKUP WIRE—25 ft. (5 Colors)..25c
SOCKETS—Mini Hearing Aid—4 or 5 pin—15c; Mini 7 pin—10c; Loktal..... 25c for 2
PLUG & SOCKET—Small 3 or 4 pins—per pair....15c
MICARTA or LINEN BASE Bakelite BOARDS for Receivers, specify size 25c
SWITCHES—Toggle SPST—25c; Slide Switch—(small)—15c; Pulsing Switch—remote—40c; Pulsing Switch—panel mount..... 25c
METER JACK—Open Circuit—25c; Closed Circuit—30c; PLUG (for Jacks) 35c
MINI PLUG & JACK—for metering, etc.—15c;
RESISTORS—small—most sizes..... 10c
POTENTIOMETER—Miniature—10,000 or 25,000 ohms—with hardware 40c
CONDENSERS—Ceramic—most sizes—10c; Hearing Aid—most sizes 15c
CERAMIC TRIMMERS—3-30 mmf & 7-45 mmf—35c
PADDER—450-1390 mmf 60c
VARIABLE CONDENSER—Air Type—screwdriver shaft 15, 25, or 50 mmf 40c
COIL FORM—with Iron Core Slug for receivers (CTC type) 30c; RF CHOKES..... 15c

SIGMA 4F RELAY COILS

repair defective relays—3,000 or 10,000 ohms $1.10

Money-Back Guarantee!

FREE—With every order over $10.00—choice of sensitive 10,000 ohm relay SPNO, or NEW BC-366 (see p. 56 Air Trails—Sept.)

Send for FREE CATALOG

GYRO ELECTRONICS CO.
325 CANAL ST. NEW YORK 13, N. Y.
WOrth 6-1290

The superb operation of the contest by the S.M.A.E. together with the beautiful weather will certainly provide fond memories to all those at the contest. It can truthfully be said that there was not a hitch in the running of the affair from the day of the reception at Londonderry House through the banquet and dispersal. Contestant housing at the Cranfield aeronautical college where the competitions were held was out of this world, with large individual rooms and dining halls waited on by servers in long tails!

The field was like one we dream of but seldom find. Paved runways were somewhat longer than a mile and anyone who has been in England can testify to the open countryside. We hate to say it, but it will take superhuman effort next year on our part to match this meet for its excellence.

Clough on 'Copters

(*Continued from page* 26)

Otherwise the great amount of kinetic energy stored in the spinning rotor may twist off a shaft or strip gears or even shatter the blades if the system suddenly freezes when the motor stops. This unit can be incorporated in the function of the clutch or may be a separate item in the rotor hub; I prefer it to be separate since this simplifies the operation of stopping the torque prop when the motor quits.

Now, how about really simple gas motor hook-ups, requiring no gears or clutches?

Sure, it is possible and practical, and may be accomplished in several ways. One way is to use torque reaction drive—such as in the little Infant powered job of the previous article. However, don't use the primitive semi-articulate rotor system of that model, but build your rotor along the lines discussed in the previous issue for the rubber co-axial job, except use unlocked blades on the big rotor to get a good autorotational descent, and locked, but feathering blades on the small rotor attached to the engine shaft, say in a rubber mount, to permit a small amount of see-saw action. Because of the strong downwash of the small rotor a brake or fin is required to prevent fuselage rotation, but for simplicity this is hard to beat.

Propelling the rotors at the tips by means of propellers has been suggested many times by many people. It seems simple, but it can be very troublesome. The reason is two-fold. First, the props act as gyros running in a tight circle—meaning the engine shaft tends to twist upward or downward, depending upon rotational direction of the blade to which it is affixed; second, torque effects may add a bit of complication. You can, however, make such an arrangement work if you use my rotor configuration, the unlocked system, and play off torque and gyro effects against centrifugal loads. Use very light driving props of as high a pitch and small a diameter as possible, and place the thrust line of the engine angled toward, or away from, the chord parallel, depending upon which way you run the rotor, to help compensate for gyroscopic twist.

NEW *Froom* TANKS

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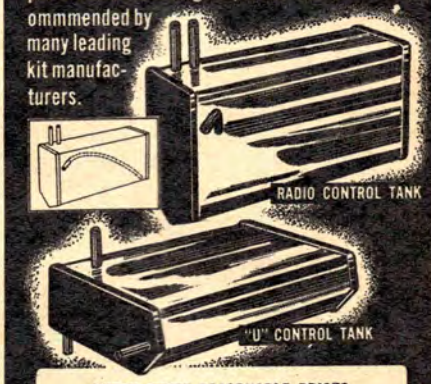

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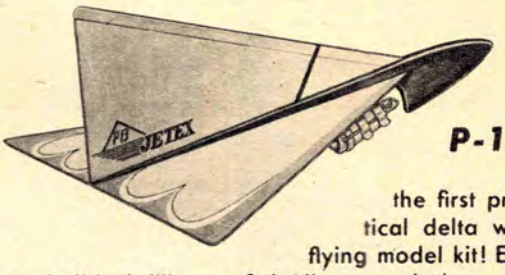

P-13

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In connection with this, note that the props can be shrouded, converted into ducted fans, with stator vanes to eliminate torque effects. This makes a neat looking job, but auto-rotation suffers heavily from any bulky excrescence at the rotor tips.

Another method of drive is to use a pressure-jet configuration. Mount the engine in the fuselage, or in the rotor, as a blower supplying air under pressure to jet nozzles in the tips of the blades. This system isn't terribly efficient, but the great power-to-weight ratio of modern small engines will let you get away with it if you are careful. This produces very clean structures, smooth blades, and excellent autorotational and control characteristics—so in a way it might be said that the system is efficient after all.

There is one angle in designing pressure jet jobs which I am not too happy about. From the standpoint of efficiency it is a fine thing to have the cylinder head and exhaust opening inside the duct, that is, behind the fan, in order that the motor may cool better, run faster from the supercharging effect of air being rammed into the intake, and the pressure augmented by the heat of the cylinder and exhaust gas efflux.

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However, the oil sprayed by a 2-cycle engine tends to gum up the works and mess up the blower ducts. Tentatively I run my jobs that way anyhow and clean the ducts after each flight with a wad of cotton tied on a string which is pulled through. Old-fashioned but effective.

I have a grave suspicion, nevertheless, that the drag of the air against oil-coated tubes may cancel out the gain produced by exhaust heat-gases. Have you, for example, ever noted the ripples and ridges that develop on the surface of an oil-coated wing exposed to prop blast? That means quite a bit of drag, and it seems logical to assume that the same condition obtains within the pressure ducts of a blower jet system. While it is true that a lot of the oil is blown out with the air and by centrifugal force, a lot of it still sticks to the inside. And that isn't so good. Probably, in the interests of tidiness, it might be well to advise piping the exhaust into the open, and eschew the theoretical benefits in favor of the practical considerations.

I have tried to present as many applications, suggestions, and observations as space will allow, in the belief that model builders will find more of value in something like this than they would in an article which dealt with the construction of one particular model and consisted largely of instructions to glue stick A to stick B and so forth. This 2-part article, together with the previous series covers, I fondly believe, enough of the basics of helicopter principles to permit anybody to turn out a very satisfactory job with a minimum experiment. Try it and see for yourself!

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Air Forecast

(*Continued from page 16*)

watched it. Plane was flown through complete land-to-land cycle. Impressive was the stability of plane during takeoff and landing on its hydro-skis. Flight performance was average, but nobody expected pilot E. D. Shannon to let his mount out.

In use, plane taxies off ramp into water, sinks to level floating position. Under power, it climbs out on its skis, skims across the surface for several thousand feet before unsticking. On landing, the pilot brings her in tail low, drags the tips of the skis in and sets her down to plane for a couple of thousand feet. After flight, plane taxies out on ramp under power. Engines are Westinghouse J34 turbojets, speed is supersonic.

PARIS AIR SHOW: Expanding continuously as friendly rival to great British show at Farnborough, the French spectacle this year showed off a variety of firsts and different planes. Most unusual: Le Baroudeur (Legion slang for a tough fighter) built by SNCASE as ground-attack craft. Powered by Atar turbojet, plane takes off from rocket-propelled trolley and grassy fields or runways alike, lands on belly skids. Top speed expected near the sonic mark.

Runner-up for looks: Potez 75, described as ground-attack plane. It's powered by pusher piston engine, cruises around 147, is heavily armored, loaded with rockets and guided missiles. With twin-boom layout, pilot

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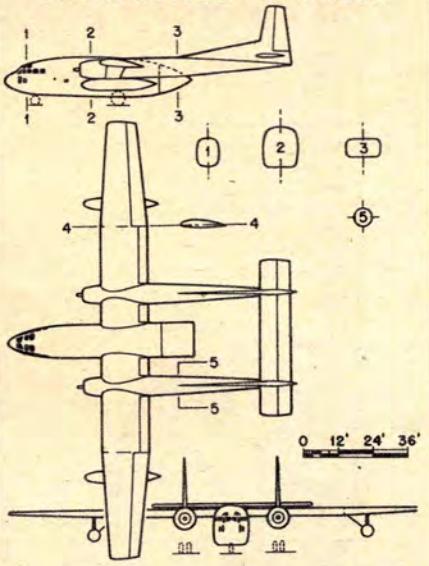
Most comfortable seats are in Martin 4-O-4, least comfortable in Convair 240 and 340. . . . Eastern Connies have dirtiest nacelles in business, and wings are criss-crossed with footprints, oil streaks and exhaust deposits. . . . Can't they design a sink big enough to wash more than one hand at a time? . . . Martin could use a water separator in its air conditioning for 4-O-4's. In humid climes, white vapor trails gush out of cabin outlets, scare bejabbers out of first-flighters. . . . Airborne cattle car: sitting five-abreast in a Connie. . . . Want to see the country? Travel by Lockheed Lodestar or Douglas DC-3. All later transports have altitude capability, use it to the detriment of the view. But that's O.K., because the windows are too small to see out of anyway. . . . Lodestars, soon to be replaced on National's Southern routes, are lovely little transports. They have short takeoffs, good cruising speed, friendliest stewardesses. . . . Boeing Stratocruisers and Douglas DG-6 series ride like limousine. . . . There is no such thing as air travel-proof luggage. Trade secret: You know why it takes so long to get baggage from plane to you? Each piece has to be individually smashed by hand. *D.A.A.*

FAIRCHILD C-119H



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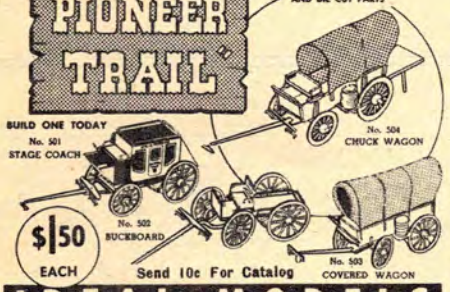

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The Model Biz

Inside dope from the model industry; kits, engines & accessories

■ The modelers of America owe a tremendous vote of thanks to the many, many members of the model industry who worked hard and long at the successful National Model Plane Championships. We suspect, though, the knowledge that the annual contest went off so smoothly was compensation enough for these individuals. Among those we remember are such famous model biz names as Mattie Sullivan, Leon Shulman, Red Hillegas, Harold deBolt, Andy Canino, Dave Call, Harry McCall, Art Hasselbach, Chuck Brebeck, Frank Nekimken and Keith Storey. Orchids to them and everybody else who labored. Other model figures in attendance included Duke Fox, Ross Guillow, Lou Andrews, Carl Goldberg, Jim Walker, Vincent Serio, Howard Bonner, Vernon Macnabb, John Worth, Gil Rose, Lew Mahieu and Ed Manulkin.

Release from Top Flite points out that Power Props and Top Flite props won more Nats' first places than all others combined . . . new item from Pactra: Aero Gloss Transparent colors. Can be sprayed, brushed or dipped

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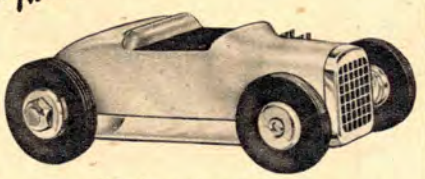

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Live Wire R/C Trainer	6.95
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R/C EQUIPMENT

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In Kit Form (less tube)	19.95
Super Aerotrol Dust Core Tuned Receiver, completely assembled with tube, less batteries	21.95
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North American Dynatrol Receiver, built up	29.95
Good Brothers Radio Control for 50-54 mc, complete equipment for single channel control	55.00
E. D. Aristrol "Boomerang" Receiver ready for installation with polarized relay and self-neutralizing escapement	29.50
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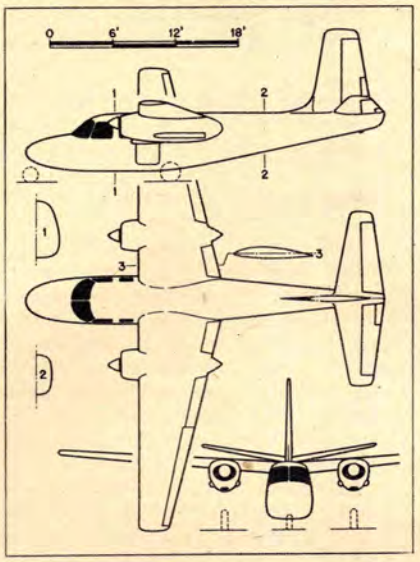

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We asked Bill Effinger what was his

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favorite design of the 3 to 5 million kits Berkeley has produced to date. "The American Ace," revealed B.E. (It first appeared in "AT" as the "New Ruler" designed by Henry Struck). "This was probably the best all-around gas model ever designed." The Ace has long since disappeared from Berkeley's production line as new trends have dictated new configurations. A current item, the new Berkeley model helicopters (Cloud Copters) presented the greatest challenge because flight and design characteristics were completely different from anything ever offered by a mfrer before and, then too, the models require some extensive hardware fittings which had to be specially engineered.

Berkeley has 78 current kits; the firm's first offerings were the scale Consolidated Fleetster and Buccaneer gas model. In the beginning the outfit had two hard-working employees: "Pop" Effinger and Bill. Now it utilizes the services of 40 full-time employees and 40 subcontracting firms. During the past 20 years "Boikley" has turned out 125 different designs in kit form; these models have held numerous records. The Super Buccaneer alone won more than 200 meets before the war. Add to that the contest victories and the record performances of the Powerhouses, Hogans, Zilchs, etc.—a terrific total.

We asked Bill what the next 20 years at Berkeley will produce. He shrugged and grinned, "Who knows? Basically we want to give the model builder what he wants. In the next few years we will see greater development of hydro flying, pressure jets and *automatic* radio control (predetermined flight)."

CONTEST CALENDAR

List meets here! Advise Air Trails not less than 90 days in advance. If any area restrictions on entries, be sure to state. Address of contact man in same city as site of meet unless otherwise specified. (Give telephone No. of contact man when possible.) When info on events is furnished these are abreviated as follows: indoor rubber powered—IR; outdoor rubber powered—OR; outdoor hand launched glider OHLG; indoor glider—IG; tow-line gliders—TL; free flight gas—FF; control line speed SP; control line scale—CLSC; control line stunt—ST; team racing—TR; combat—COM; radio control—RC; rise-off water free flight—ROW; carrier models—CAR; free flight scale—FFSC; non-flying exhibition scale—NFSC; jet speed—J; controline endurance—CLEND; Wakefield—WAK; PAA-Load—PAA.

CALIF.—Bakersfield, Oct. 11. Gas Modelers record trials. Clinton Merrill, 212 Washington, Oildale.

CALIF.—Lancaster, Oct. 24, 25. San Valeers MC open meet. Paul Gilliam, 631 W. Broadway, Glendale.

R. I.—Woonsocket, Oct. 25. Flying Fools meet. T. W. Wenclawik, 5 John St.

CALIF.—Taft, Nov. 1. Condors' record trials. Francis Stewart, 900-21st Bakersfield.

(See also contest mentions in Dope Can, R/C, Southern Scene, and Western Roundup columns.)

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#1	#2	#3
Jenny	Sopwith	Rumpler Taub
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Fokker E. 1	Spad 11	Vickers Gunbus 9
De Haviland 2	Fokker C. 1	R. E. 8
Sopwith Pup	F. E. 8	Sopwith Camel
	Bristol Mono	

#4	#5	#6
R. E. 12	Sopwith Triplane	Breguet Bomber
Voisin	Nieuport 28	Salmson Bomber
Albatross D. 5, A.	Fokker Triplane	De Haviland 4
De Haviland 6	Roland 2	German L. V. G.
Albatross 1	De Haviland 5	Sopwith 1½ Strutter

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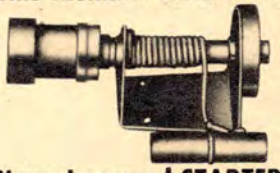
.012	2-52'	.60
.014	2-52'	.60
.016	2-52'	.60
.008	2-70'	.75
.010	2-70'	.75
.012	2-70'	.75
.014	2-70'	.75
.016	2-70'	.75
.012	2-125'	1.00
.012 Jet wire	1-100'	.25

This Month's Feature . . .



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.015	2-70'	1.95
.018	2-52'	1.50
.018	2-70'	1.95
.021	2-70'	2.15
.018	2-85'	2.25
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TVD #6 - Knight Twister Jr.
TVD #7 - Long Midget (Mustang) Racer
TVD #8 - Republic XF-91
TVD #9 - Grumman F9F Panther
TVD #10 - Beechcraft Mentor 45
TVD #11 - Canada's Dehavilland DHC-3 Otter
TVD #12 - France's Sipa-200 Jet "Flivver"
TVD #13 - England's Supermarine MK-1 Attacker
TVD #14 - England's Gloster Javelin
TVD #15 - Russia's U-IL 28 Advanced Trainer
TVD #16 - England's Hawker Hunter
TVD #17 - France's MX Holste MH-152
TVD #18 - Russia's Lavochkin LA-17
TVD #19 - England's Hawker Hunter P. 1081
TVD #20 - Russia's Yak-18 Trainer
TVD #21 - Lockheed F-94
TVD #22 - Vought F7U Cutlass
TVD #23 - Curtiss JN-4D Jenny
TVD #24 - North American T-28A
TVD #25 - Thomas Morse Type 9C Scout
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GREAT LAKES BATTERY CO.
DEPT. 32—KENOSHA, WISCONSIN

Taper Wing Waco

(*Continued from page 33*)

as follows: front (axle) strut fastens to rear of F3 with spade or "J" bolts, rear struts are wrapped and soldered to front strut near axle, with rear upper ends landing on the front bottom face of F4 (note holes to receive same). Try to make all bends possible before installation and remember that the *true* lengths are given in the front view and cannot be measured or "lifted" from the full-size plans.

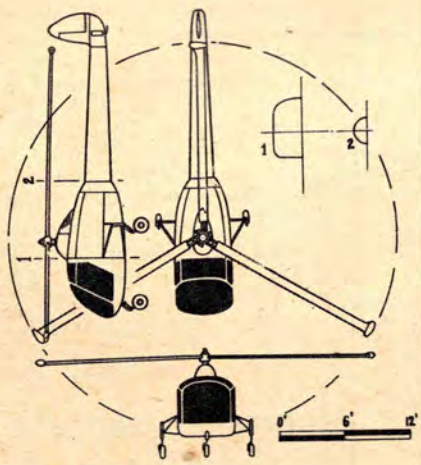
It won't hurt for the L.G. assembly to be installed so that there is a little tension between the rear struts and F4 to keep the strut ends in their respective holes. Allow the strut ends to project about ¼" past the rear face of F4.

The tailskid is bent up as per the plans and "sewn" to the 1/16" plywood mount with fine wire. Cement liberally. Then cement assembly to top surfaces of the bottom longerons. A vertical brace can be added for safety's sake at the rear of the mount, but be sure that it is not in the way of the horn or pushrod. The fuel tank should be installed now, generously cemented and braced against shifting.

The top formers 1T, 2T, 3T, etc., are now added and the stringers slipped into the notches. Hard 3/32" x 3/16" stringers are used forward of F3 and on the top formers 3T, 4T, and 5T, where 1/32" sheet balsa covering is to be applied, with 1/16" x ⅛" hard balsa stringers used elsewhere. The 3/32" x 3/16" stringers butt up against the front of 6T, with the 1/16" x ⅛" stringers being used from 6T of the tail post.

Although the area over the stabilizer was sheet-covered in the original model, many will prefer the simpler expedient of using a carved block, hollowed out for lightness.

S.O.1120 ARIEL



A very interesting French helicopter the unusual feature of which is the transmission of power to the rotor blades. Powerplant consists of a Turbomeca Arrius turbine and compressor in one unit. The turbine drives compressor which feeds air through rotor hub and hollow blades to combustion chambers at tips where fuel is injected and ignited, driving rotors. Residual thrust from Arouste engine is led through tail pipe to rear of fuselage where it vents out through side vents. A deflector plate operated by rudder pedals permits gases to escape to right or left, thus acting as a rudder. Shown here is two-piece version. Later models hold three.

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701 E. Pike at Boylston EA 8650

This block can be spot-cemented and carved after the horizontal tail surfaces have been installed. Once hollowed, it can be cemented on permanently, followed by the rudder surfaces. Nothing unusual about the tail construction—just plain 3/32" sheet. But *do* cut out clearance for back-travel of the elevator horn. Note the simple but compact pushrod fitting for the elevator horn.

Once the balance of formers and stringers are in place, covering may be started. The 1/32" sheeted areas are applied in the following sequence: first, a narrow strip of 1/32" sheet is trimmed to fit between the top stringer and the stringer adjacent to it. Rubber bands around the fuselage should hold it snug against formers and stringers after the cement is applied to hold the sheet against the top stringer. The other edge, along the next stringer, is left loose, so another sheet can be slipped under the rubber bands. A razor held against the edge of the first sheet can cut and duplicate the trimmed edge to the underlying sheet. Of course, the rubber bands will have to be shifted to avoid cutting them.

Thus, when a sheet is trimmed on both edges, only the high edge is cemented in place—the low edge forms a pattern for the adjacent sheet. And so the covering progresses downward from the top stringer till all the side is done. If the wood you have on hand is "uncooperative," you can coax it along to fit any compound curves by dampening the exterior face and by using thin cement on the interior surface to draw it around. Put aside just long enough for the curve to "set" slightly, then install.

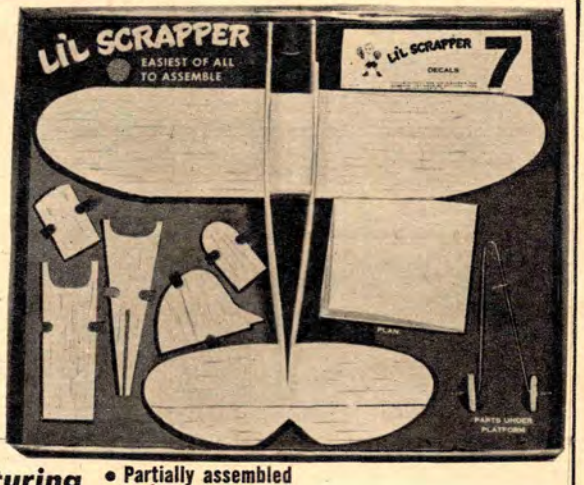
It will be much simpler to do the work in short longitudinal sections—in other words, don't attempt to cover too *long* a stretch. Short pieces, from former to former, will go on easiest.

Complete building details are available on the full-size plans.

LIL SCRAPPER

Control-line sport flyer
Class ½A
14" span

$1.50



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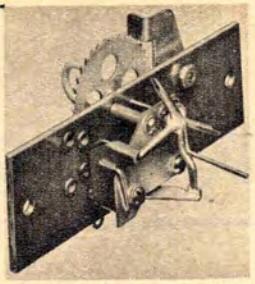

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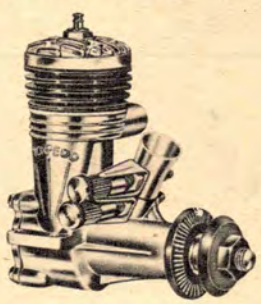
Model Aeronautic Publications
Box 333 Sta. D New York 3, N. Y.

TWO-SPEED TORPEDO .19



K & B establishes another first with the first two-speed glow ignition engine. This engine is equipped with two needle valves and is very practical for use where engine control is desired. Radio Control and other special events as the many carrier event is primarily the reason for the manufacture of this engine. Any reliable motor control unit may be used, however for radio control, K & B recommends the Bonner escapement shown on this page. The Torpedo .19 two-speed is available at your dealers **$16.95**

SHOWCASE

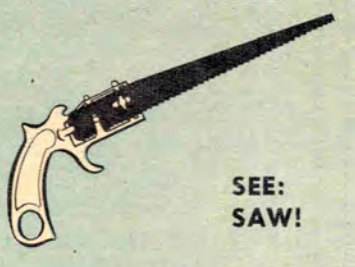
TRY YOUR FAVORITE HOBBY SHOP FOR ITEMS PRESENTED HERE. ALL DATA CHECKED CAREFULLY, BUT IS SUBJECT TO CHANGE

NEW FIRM

Attractively presented to catch your eye and convince you that building's a cinch, the Li'l Scrapper is initial offering by Airport Models Co., Millville, N. J. This one is for Half-A engines and includes cut-out formers and all necessary wood parts ready for gluing, decals, landing gear; $1.50.

Mercedes-Benz scale model from Autokits, 2708-A Magnolia Blvd., Burbank, Cal. For $3.95 outfit also has Bugatti, Maserati, Jaguar XK-120 and Alfa-Romeo. Kits include 1/32nd scale drawings, partially shaped wood block, detailed parts such as grill, louvres, simulated wire wheels, tires.

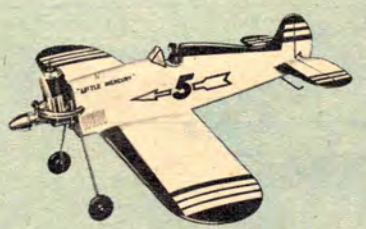
SCALE RACERS



SEE: SAW!

Especially created for Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y., is this all-purpose modeler's saw which cuts balsa without binding or tearing, or plastic and metal. One coarse blade comes with saw as unit for 35¢. Extra blades are 20¢ each: fine, medium, coarse.

Latest entry from the Scientific hangar is this Half-A U-control stunt and sport flyer, Little Mercury. Comes with completely carved balsa fuselage; priced at $1.50. Wingspan is 18 inches; 14 inches overall. Takes engines from .039 to .074. Parts precision cut. Plastic windshield, pilot.



LITTLE MERCURY

HOLD IT!

Phil-leys, manufacturer of E-Z-Just plastic control handle have added pre-formed loops to both their Standard and Hot-Rock handles for quicker hook-up. The 21-strand flexible steel cable leaders have strong, pre-tested loops to adjust and lock quicker. In red, white and blue box.

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Stunts like a dream and has power to spare. Royal Spitfire engine has Jim Walker "Supercharger" modification for greater power, instant starting, fuel economy. Buy it ready to fly. All parts finished, painted, fuel-proofed. Span 19 in., wt. with motor 4½ oz.

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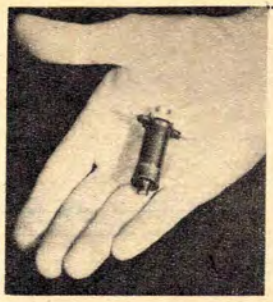

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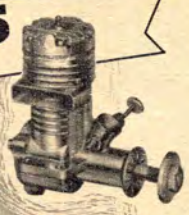

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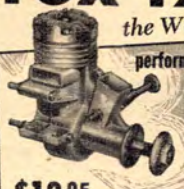

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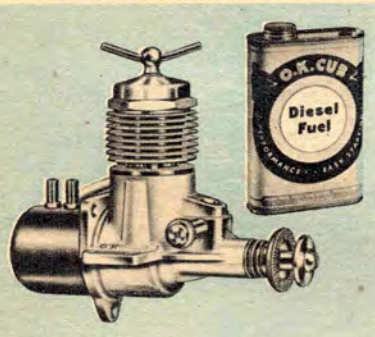

G'BY TO BATTERIES

This is the first of Herkimer Tool & Model Works' new OK Cub diesel series, the Class A .075. New engine has an output equal to average .09 glow plug engine according to designer, company president Charles Brebeck. Herkimer's diesel fuel fortified with heat resistant lubricants.

WALT'S BEST

Recent book on model airplanes is Walt Musciano's "Model Plane Manual." 14 chapters, 160 pages, 56 photos and illustrations showing all types of models from jets to rubber. Covers both control line and free flight; includes model clubs. Aero Books, 282 Taft Court, River Edge, N. J. $2.95.

Colonial Schooner SULTANA of Boston 1767

Model Shipways' newest! A handsome schooner on 3/16" scale, a real sea-going New Englander, tho only 50 feet of hull. Plans are by Howard I. Chapelle, eminent marine authority. Plans—3 sheets by Chapelle—$1.25
Complete kit, including machine carved hardwood hull, wood parts, castings, cordage, plans and instructions $8.50
See this kit at your dealers, or send 25c for our 1953 catalog illustrating 17 interesting ship kits and many fittings.

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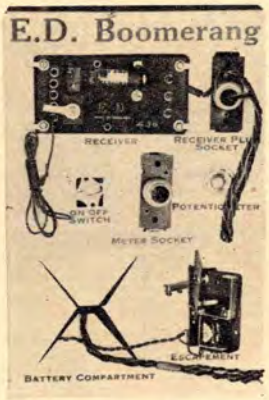

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- Polarized Relay is not affected by vibration.
- Special external sockets for additional control installation.
- Antenna length NOT critical.
- Extreme sensitivity (reception ranges in excess of 1 mile).
- Small compact size for easy installation. Easy to mount.
- Self neutralizing, current saving escapement SAVES OVER 50% ON BATTERY POWER.
- All components are fully prewired—not just assembled. Ready for instant installation.
- No soldering, just attach batteries. There are NO ADDITIONAL connections to be made.
- Receiver instantly removable for use in other models.

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- The only transmitter with the special "Printed Circuit" wiring. The latest scientific development. Guarantees circuit stability. No wires that might disconnect.
- Free Band to conform to F. C. C. Frequency Regulation 27.255 MC/S.
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- Full 9 foot whip antenna for greater range.
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- 3A 4 tube used for greater power output.

Complete, easy to understand instruction manual included. Price for complete outfit... Receiver, Transmitter, and Escapement (less batteries) **$57.50** (include $1.00 to cover cost of postage & insurance. No COD's.)

Boomerang receiver complete with escapement **$29.50**
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314 5th Ave. (32nd), Dept. AT-113 NYC 1

You Ask "AT" answers

Japanese Silk vs. Paper . . . I am in a position where I can pick up some Japanese modeling silk at reasonable prices. I would like to know the difference in weight and shrinkage between it and paper and if it is more, or less, suitable in modeling.

Also, I would like to know the most popular or most suitable size engine to use on a radio-controlled job.

C. Parr

• Japanese silk is undoubtedly the finest covering material available. Its weight is slightly more than tissue but it is also much stronger. It is best covered wet and carefully pulled taut while doped through to the construction.

The .19 engines through .29 seem best for radio control, having plenty of power to do the job. Too many fellows make the mistake of overpowering their R/C jobs with large .60 engines.

Mosquito Cockpit Details . . . I'm building a De Havilland XVI Mosquito Bomber 40" wingspan from plans I received from my brother-in-law in England, but there are no cockpit details, etc. I am powering it with two Ardens and hope to have it at the Nationals this year.

Could you tell me where I might be able to get details for this model?

Leyna L. Ross, Borger, Tex.

• Since no scale drawings are available your best bet would be to reconstruct the cockpit by drawing in a six-foot pilot to the scale of your model and adding the details around him. Measure the general position of main objects: instrument panel directly under the V point of the windshield, seat back and bulkhead opposite the second transverse canopy frame. The cockpit is divided down the middle, the pilot and all controls being on the left with an open space on the right for bombardier access to nose space. The entrance hatch is on right lower side opposite pilot's seat.

For Transparent Covering . . . I have been bothered by this question ever since I have started building models. That is, how to get a transparent covering job on a plane. I have seen planes that have covering so clear that they look like they have been covered with microfilm. In fact, it is possible to read print held six inches in back of the wing. Just how is this done?

Jim Halbert, Redlands, Calif.

• Modelers like Denny Davis and Paul Gilliam get a semi-transparent covering through numerous coats of dyed dope which has been plasticized with several drops of castor oil or oil of wintergreen. Denny and Paul use from 8 to 16 coats of thin dope. Paul then waxes his models with a good grade of automobile wax. Pactra Chemical Co. has announced a lightweight hot fuelproof Aero Gloss dope available in "transparent colors."

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Berkeley's 20 Years of Model Making History

The name of Berkeley has been so closely allied with the development of modern model building that the new ideas from the drawing boards of Berkeley designers have paralleled the great strides of American Model Builders.

Here are some of the things that happened in Model Aviation, closely allied with Berkeley, over the past twenty years:

1933 BERKELEY ESTABLISHED

1934 Berkeley produces its first scale rubber powered model kits, the "Consolidated Fleetster" and the "Folker Triplane."

1935 Berkeley becomes the first source for gas model supplies and introduces the first gas model kit, the original "Buccaneer."

1936 The original nine foot "Cavalier" was introduced.

1937 Great new gas models—"Buccaneer Standard," "Super Buccaneer."

1938 The big beautiful "Custom Cavalier" was introduced.

1939 Henry Struck's "American Ace," "Flying Cloud" and "Sinbad" gliders were added to the Berkeley line.

1940 Buccaneer "B" and "C" Special developed and produced. First models with slotted wings and stall-proof tails.

1941 "Championship" Flying Scale line started with Struck's "Interstate Cadet."

1942-1944 Tactical Demonstration Solids.

1945 P-47 "Thunderbolt"—First Berkeley Scale Controliner*.

1946 P-51 "Mustang" Controliner* with flaps, retracting landing gear and other features. (It won again at the 1953 Nationals.)

1947 "Super Zilch" Stunt Controliner* and Korda "Powerhouse" designs prove to be most popular contest ships of the year. Struck's "Stinson Sentinel" wins Nationals in Flying Scale.

1948 Cessna "195" sets new trend in Controline Scale Design. "Squirt" is first jet powered model to be kitted.

1949 "Key" is first Team Racer design in kit form. "Super Brigadier" is designed for PAA-Load and Radio Control.

1950 "Hogan" Free-Flight designs by Denny Davis, "D-E Aerotrol" Radio Control made available in low priced kit form.

1951 "Bootstraps" PAA-Load, "Quest" Team Racer, and beautiful Scale models of the "Pitt's Special" and North American "T-28."

1952 "SNJ" (AT-6) and "Savage" Scale Models, Bootstraps "A-RC" for radio control, and license-free "Super-Aerotrol."

1953 P-40 "Warhawk" Semi-Scale Controliners*. 1/2A "Privateer" Flying Boat, "Super Cloud" Wakefield among many new models introduced to make 1953 the biggest year in Berkeley's history.

BERKELEY'S GROWTH UNIQUE IN MODERN BUSINESS

Berkeley Models Inc. is a manufacturing company founded by Bill Effinger while still in high school in 1933. Originally it was a small home workshop in a three-car garage. Without any additional investment, it has grown to its present size. The assembly plant alone now occupies nearly 15,000 sq. feet in a modern building in West Hempstead, Long Island.

During its twenty years of growth, the only profits drawn from the business have been for employee pension funds. All other profits have been used for the expansion of facilities and the development of new and better model products.

Pictures out of the past. These early gassies were flying laboratories of their day. They helped pave way for today's Berkeley Designs.

Raspante's "Super-Super Buccaneer," a "Forster 99" powered 1939 radio job.

Ed Burton's beautiful gull wing modified "Custom Cavalier," built in '38.

Pioneer radio flyer Pat Sweeney with his "Custom Cavalier" 1938 radio job.

First gas job ever built from a Berkeley kit, original "Buccaneer." ('35)

Brown powered "Super Buccaneer" built by Bill Flynn. Kits still available.

Flight photo of "Super Buccaneer" on 57 minute record breaking flight, '36.

The first gas job ever built for Berkeley. Brown engine, Ser. No. 176. ('35)

Joe Raspante holds aloft his beautiful "Snow White" powered by a Forster 99.

A "60" powered Buccaneer "C" Special, slotted wing, stall-proof tail. (1940)

Berkeley's Design Staff Represents 117 Years of Combined Model Building "Know-How"

Bill Effinger in 1936

Bill's original 1935 "Buccaneer"

■ The average experience of designers on Berkeley's staff is over 29 years! You receive all the benefit of this experience when you select a Berkeley design.

Bill Effinger, Founder of Berkeley. Bill started Berkeley Models in 1933 as a means of working his way through engineering school. The success of the firm's designs during his school years inspired him to build the Berkeley line to its present position in the model industry. While president of Berkeley Models, he still takes active interest in the design, development and engineering of all Berkeley products.

In the early 1930's he was a pioneer gas model builder. He designed and built his first gas job without having seen one before. His second model, the original "Buccaneer," became the first commercially produced gas model kit. Since then "Buccaneers" have appeared in many sizes. Their pre-war contest winnings are legend. Today they are still one of the most popular designs for Radio Control and Sport Flying.

Bill's most recent efforts have been in the development of Berkeley's new seaplane designs along with Don McGovern and Henry Struck.

Don McGovern

Don's "Privateer"

Don McGovern, Sport Flyer and Artist. Don has been designing and building model airplanes since 1935. In 1937, he started building gas jobs and has never stopped. A member of the Prop Spinners, his interest is mainly in sport flying, particularly seaplanes of all types.

Don is an accomplished artist and draftsman. He has served as a model editor and has written many articles on building and flying. For the past six years he has been associated with Berkeley as advertising and art director.

In addition to the many fine plans he has drawn, he is the designer of the 1/2A "Privateer," Berkeley's popular new Long Planing Hull Flying Boat, the multi-engined North American "Savage" and the new P-6E "Curtiss Hawk."

Joe Dale
Designer of "Super Aerotrol"

Henry Struck, Former National Champ and All Time Scale Model Champ. Those who meet Henry on the flying field see him as a quiet, unassuming flyer. His first flight with a new model is generally uneventful. The second flight after the "Struck Touch" has been added is spectacular. "Hank" has been building models for the past 28 years. An expert tool designer and draftsman, he imparts something extra to model building with each of his new designs.

As an active contest flyer before World War II, he collected a roomful of trophies. His crowning contest achievements have been the winning of the 1941 Nationals as high point champ and also the winning of the Joy Memorial Trophy for National Flying Scale three times, using the "Interstate Cadet" and "Stinson Sentinel," both now in kit form.

Struck is known for his Air Trails designs of the "Record Hound" and the "New Ruler." The "New Ruler" was kitted by Berkeley in 1940 under the name of "American Ace."

He also designed the International Free Flight Speed Record Holder. What is not generally known is that Hank, during World War II, built and flew the first Supersonic Model Airplanes. These models measured only in fractions of inches and were shot from high-powered guns. They provided the government with valuable scientific data before the advent of supersonic wind tunnels.

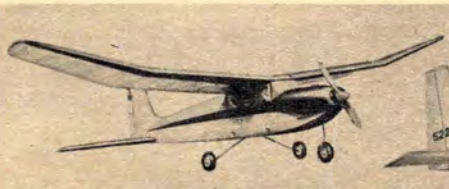
Designs of Henry Struck currently in production at Berkeley include: Bootstraps "A-RC" for Radio Control; 1/2A "Bootstraps" for PAA-Load; "Sinbad" Gliders; the new "Super Cloud" Wakefield Design; and the great line of "Championship" Flying Scale Models.

Henry Struck

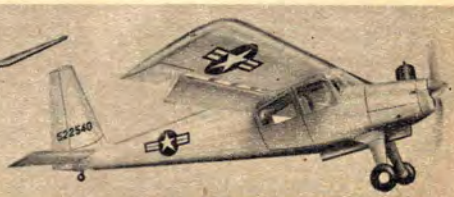
Joe Dale, "Old-Old-Timer" in Model Aviation. Joe Dale has been building model airplanes since before 1910. His contest flying career was in the years between 1910 and 1917, when he built and flew with such model plane immortals as Cecil Peoli and Percy Pierce. In 1917 Joe's interest turned to radio as well as model airplanes and he received his "Ham" radio license that year. Since 1917 he has been issued a number of patents on radio devices. As an expert machinist he has built dozens of gas and diesel engines of his own design.

Joe Dale is responsible for the development of new and better things in radio control at Berkeley. The new D-E "Super Aerotrol" Transmitter, Receiver, and Escapement are the result of his efforts.

Henry's "Super Cloud"



Bootstraps "A-RC"



YL-24 "Helioplane"

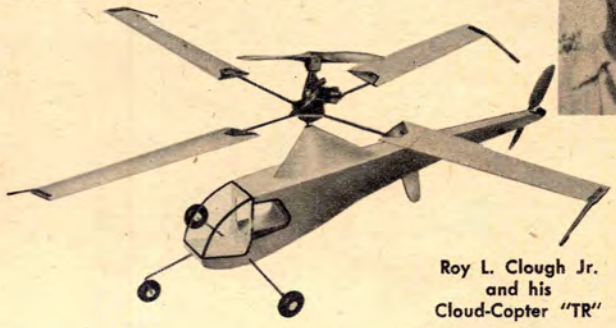
Jim Saftig and his "Zilches"

"Super-Duper Zilch"

"Mini-Zilch"

These Expert Builders and Designers have helped Berkeley Become the Leader!

Bob Elliott and his P-40 "Warhawk"



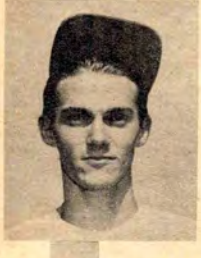
Roy L. Clough Jr. and his Cloud-Copter "TR"

Denny Davis and his "Sandy Hogan"

■ Bill Effinger, as President of Berkeley, realized many years ago that any one designer has definite limitations in the vast scope of model airplane design and flying. Therefore, he selected those he thought best in each field, to design exclusively for Berkeley. Today the Number One Team of model designers are with Berkeley to give you the world's best model designs.

Throughout the years Berkeley has drawn on the "cream of the crop" to attain its goal of excellence. In pre-war years there were Ben Shereshaw for his "Cavalier"; Alan Booton for his "Gondolier" floats and his famous Folkerts Racer; Larry Eisinger for his P-47 Controliner*.

In more recent years Berkeley has been helped by Paul Plecan on the "Minnow" and Cessna "195"; Don Newberger, the Controline Speed Flyer, on the "Whirlaway"; Keith Storey, Mr. Team Racing himself, and President of the Academy of Model Aeronautics, on the "Key" and "Quest"; Dick Korda, one of the all-time great names in model aviation, for his "Powerhouse"; Harold Bunting, a pioneer in Jet Controline, on the "SQUIRT"; and last but not least, Roy Clough on Berkeley's sensational "Cloud-Copter" Helicopters.



Keith Storey's Team Racers

"Quest"

"Key"

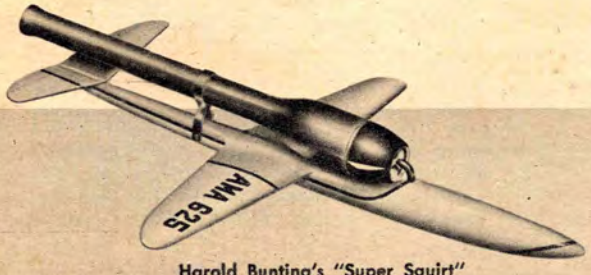
Denny Davis, West Coast Free Flight Expert. A resident of San Diego, Denny "Hogan" Davis grew up in a model building family. His father, Frank Davis, was the first Novice National Champion. An active builder since 1936, he is a regular contest flyer and a member of the San Diego Aeroneers. He was the first model builder to achieve a perfect 30 minutes in Class "C." He won first in "A" and "D" at the Internationals in 1949, and "A" at the 1950 Nats.

Jim Saftig, "Mr. Stunt Flyer." Jim was the first National and International Stunt Champ. Many of the present day controline stunts were originated by him. His straightforward stunt designs were chosen by Berkeley *before* he won his first Championship.

Jim's "Zilch" designs are produced exclusively by Berkeley. In production at present are the "Mini-Zilch," "Wee-Duper Zilch," "Lil' Duper Zilch" and the big "Super-Duper Zilch."

Bob Elliott, New 1953 Stunt Champ! Bob, of Atlanta, Ga., is one of the newer members of the Berkeley design team. His specialty is making realistic Controline Stunt designs. Since we bought Bob's Semi-Scale P-40 "Warhawk" design, it has won the Tangerine Internationals and both Junior and Open at the 1953 Nationals.

Berkeley has commissioned Bob Elliott to develop other Semi-Scale Stunt models. The first new model will be ready early in 1954.



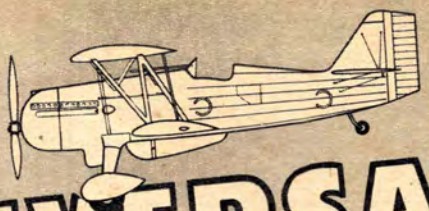
Harold Bunting's "Super Squirt"

Benny Shereshaw "Custom Cavalier"

Dick Korda "Powerhouse"

Paul Plecan "Minnow"

Berkeley's 20TH ANNIVERSARY SPECIAL DESIGN...



$4.95

- Deep Drawn Metal Cowl!
- Stamped Metal Wing Struts!
- Formed Metal Wheel Pants!
- Metal Rudder, Elevator Hinges!
- Formed Wire Landing Gear!

- Jim Walker "U-Control" System!
- "Autotrol" Rudder System!
- Rubber Wheels, Hardware!
- Authentic Decals in 4 colors!
- Full Size Detailed Plans!

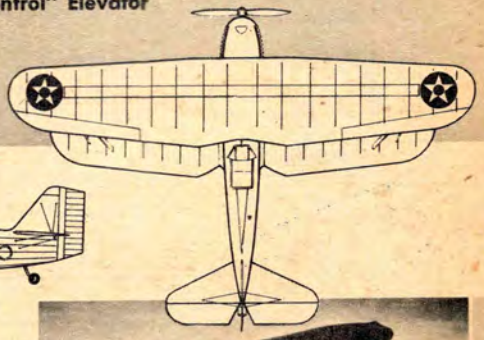
- Shaped Fuselage Sections!
- Side Profile Assembly Keel!
- Shaped and Notched Wing Edges!
- Die-Cut Balsa and Plywood!
- Celluloid, Covering Tissue!

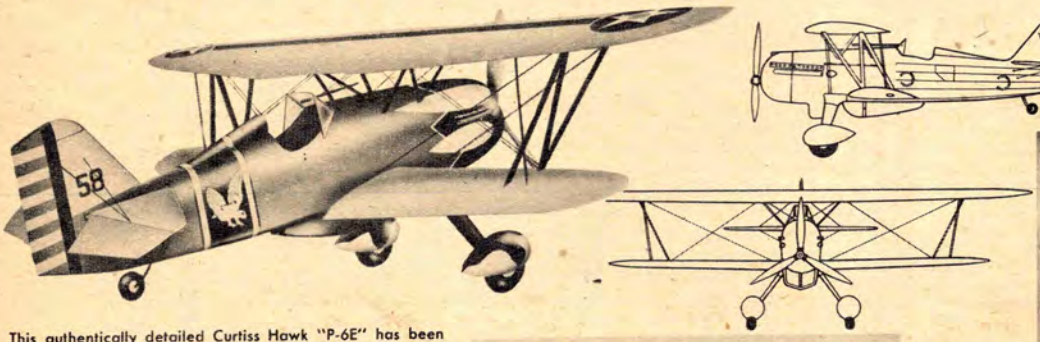
CURTISS HAWK "P-6E"

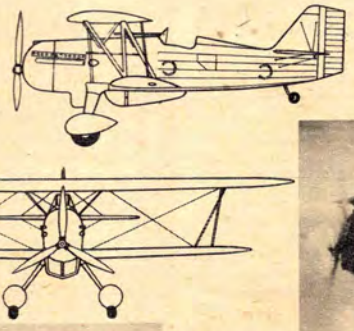
For .09 to .15 Engines — 3/4" Scale — 23 3/4" Wingspan

"Autotrol" Automatic Rudder — Genuine Jim Walker "U-Control" Elevator

Designed by Don McGovern and Bill Effinger
with the cooperation of the Air Force Technical Museum







This authentically detailed Curtiss Hawk "P-6E" has been designed for ease of construction. The wings are of sparless construction, with shaped and notched leading and trailing edges. Die-cut ribs slip right into place.

A die-cut side profile insures rapid and accurate former assembly. Shaped blocks are included for curved forward portions. Formed metal cowl and wheel pants simplify construction. Sheet stab and rudder with concealed hinges.

Lower wing is aligned by fuselage side profile. After covering both wings, the stamped metal struts are installed and upper wing is dropped into position, aligned.

Formation of "P-6E's" from Selfridge Field, Mich.

Capt. Ross G. Hoyt in Curtiss "Conqueror" powered "P-6E" over Selfridge Field, Mich.

The Curtiss Hawk "P-6E" is one of the great historical models of the Air Force. It was our best pursuit ship of the early 1930's. Berkeley's model is authentic, scaled without deviation from rare service manuals supplied to us by the Air Force Technical Museum. The complete decals for the famous "17th Pursuit Squadron" from Selfridge Field, Mich. make it a really beautiful model to own and fly.

buy BERKELEY at your local dealer!

If no local dealer is convenient, mail orders will be filled by Berkeley Model Supplies, Dept. AT., West Hempstead, N. Y. Please include 25¢ packing & postage.

McCOY ENGINES SET NEW RECORDS AT NATIONALS!

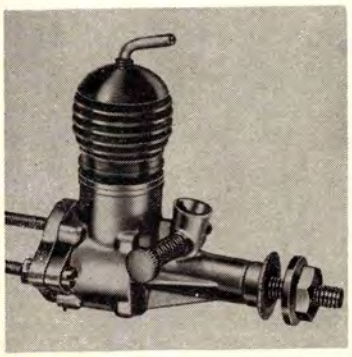
Diesel Proves Meet Sensation; "Red Heads" Flash New Speed Marks

NAVAL AIR STATION, Willow Grove, Pa.—Sensational victories were scored here by McCoy powered planes as five first places were recorded and three new records established in the 22nd annual National Model Airplane Championships. Some 1,200 modelers from throughout the nation competed.

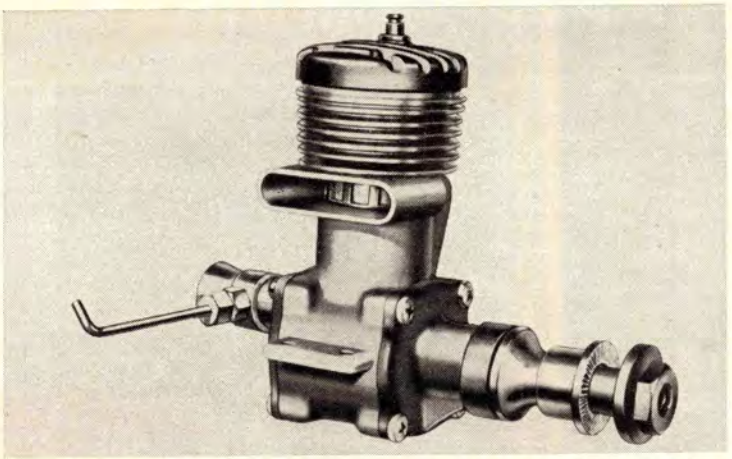
Notable in the country's top meet was the sparkling performance of Diesel powered craft. This marked the first year of competition for this new McCoy engine, introduced only a few months ago to modelers.

Record Lift

A record lift was recorded by Hal Roth of Richmond, Calif., with a 23¼ ounce load in his Diesel powered Clipper Cargo flying the Free Flight ½ A PAA event.



McCOY DIESEL *carried the load*



McCOY RED HEAD "60" – *this is the engine that showed the speed*

First place with another Diesel in the senior ½ A PAA Load was James W. Bowers, Cleveland, O., with a performance at 8.16.2.

Diesels, McCoy 19's and McCoy 49's showed up in classy fashion in numerous other free flight events garnering trophies for several entrants.

Red® Heads Hot

Smashing triumphs were recorded in speed events by competitors who consistently chose McCoy's famous Red Head "60" to power their craft. Two record breaking performances were recorded in the C-D Open and the Senior Division.

The McCoy "60" virtually dominated these two divisions, taking first and second places in both as well as two additional places in each event.

Guy Rogers, Corpus Christi, with 151 MPH smashed the open speed record with his McCoy powered plane, while Sam Dehelean's sensational 153 MPH established a new top speed in the Seniors.

In the Junior Class C-D, every one of five winners powered his ship with the McCoy "60." Top performance in this event was displayed by Alfred Davis' McCoy powered plane.

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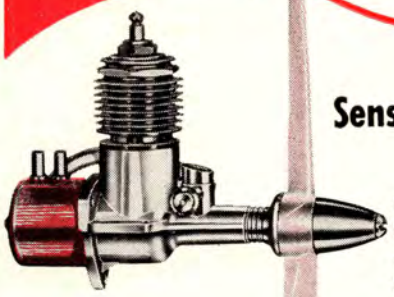


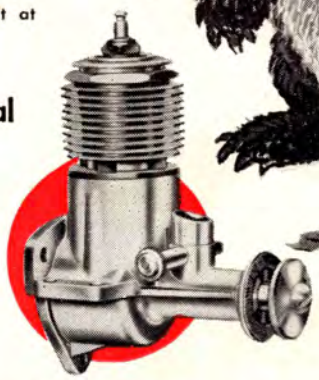
only $4.95 completely assembled with fuel tank, glow plug, propeller and spinner.

Sensational New ½A Performer
OK CUB .049B

For the beginner or the expert. A brand new, lighter, more powerful "OK" .049 CUB. Both radial and lug mountings — fast starting and higher speed — extended prop mounting for safer operation. Provides maximum output at higher RPM. See it now!

New Class A and International Class Displacement!
OK CUB .14

Requested by leading plane designers. Light—only 2¾ oz. Souped-up power — 9,000 to 17,000 RPM. For free flight, U-control and R/C flying **$8.95**



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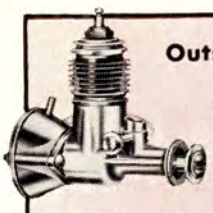
OK CUB Combination Packages

Get an OK Cub Combination Package and enjoy the best in value, power and performance. Each package contains assembled engine, prop and fuel tank.

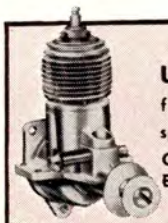
From $4.95 to $7.75

OK .049 Power Kit

Enjoy the thrill of building your own engine with this precision assembly kit. Only **$4.95**



Outstanding ½-A
Rugged — easy to start — greater power.
OK .049X CUB Combination $5.75



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for stunt and speed flying.
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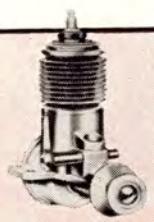
Combination $6.75



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for powerful performance in Class A.
OK CUB .099
Engine only $6.95
Combination 7.95

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Ideal for breaking in glow plug engines. Methanol base heavily fortified with nitrates. Won't corrode, gum or varnish. Gives easier starting, smoother operation, higher speeds. For all OK's and engines of similar compression ratios. Full Pint **85c**

Quicker Starting, Faster Accelerating!
OK GLOW PLUGS

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